Public Utilities
FORTNIGHTLY

GREETINGS—63RD ANNUAL CONVENTION—USITA—OCTOBER 9-12, 1960—CHICAGO

OCTOBER 27, 1960

They'll dial-in next year's harve

Open a package of frozen peas. Chances are the peas came from the fertile fields around Fairm Minnesota. Here's how an *Independent* telephone company will help them taste better than

What do telephones and frozen foods have in common? Watch the feverish harvest-time activity around Fairmont and you'll understand.

For flavor perfection, peas must be picked at the split-second of maturity. And telephones carry the alert.

Making the job faster and easier is a project of the *independently* owned and managed Central Telephone Company. At a cost of nearly $2,000,000, all telephones in the Fairmont area are being converted to dial.

Central's effort echoes the prosperity Stokely-Van Camp's frozen food business brought to Fairmont. Because modern business *mus* modern telephone facilities.

That's true in all 164 communities in states served by the Central Telephone It's true, too, everywhere the more than *Independent* telephone companies are o With 11,000,000 telephones already in s they're investing another million dollars *day*... to help you reach all Americ..

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INDEPENDENT TELEPHONE COMPANIES ARE INVESTING IN YOUR FUTURE—THROUGH BETTER COMMUNICATIONS

Miles of telephone cable are going underground as part of the dial-conversion program in Fairmont, Minnesota.

Public Utilities FORTNIGHTLY

VOLUME 66 OCTOBER 27, 1960 NUMBER 9

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ARTICLES

The Telephone Industry Welcomes More Co-operation ..... *C. C. Pearce* 601
The importance of the USITA's program for independent telephone company people.

The Impact of Regulated Industry on the National Economy ..... *James W. Cook* 605
The part regulated industry plays in national economic growth may be quite generally overlooked.

Communications in Business ..... *T. W. Eadie* 609
Greater public knowledge helps the companies to do a better service job.

The Future Rôle of Commercial Communications ..... *Francis X. Welch* 619
The place which the telephone industry as such may have to carve out for itself in the increasingly complex area of future communications.

Bell's Garden for Growing Managers ..... *James H. Collins* 627
Among the most important duties of utility management is the duty to reproduce itself.

FEATURE SECTIONS

Washington and the Utilities 637
Financial News and Comment ..... *Owen Ely* 641
What Others Think 650
- Controlled Growth—the Key to Future Telephone Industry Success 650
- The Forces Shaping Our Future 654
- USITA Management Development School 655
- Long-distance Communication Via Satellites 658

The March of Events 661
Progress of Regulation 665
Industrial Progress 27
- The Telephone Industry Moves into the Sixties—A Symposium 27

• *Pages with the Editors* . 6 • *Utilities Calendar* 25
• *Coming in the Next Issue* 10 • *Frontispiece* 26
• *Remarkable Remarks* .. 12 • *Index to Advertisers* . 58

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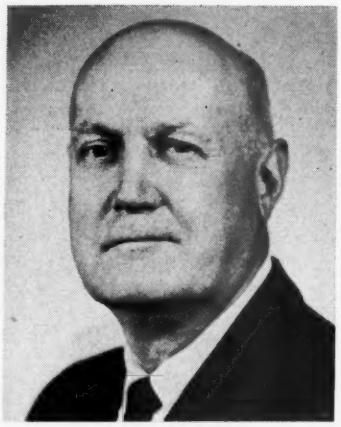
Pages with the Editors

ONCE again we are happy to bring to our readers a special telephone issue. The actual release date of this issue has been planned to coincide with the annual national convention of the United States Independent Telephone Association in Chicago, October 9th to 12th. All of the feature articles and much of the departmental material in this issue have been planned by the editors so as to be of special interest to the telephone industry.

AMONG the other features will be found, beginning on page 27, a collection of statements by presidents or other executive officials of numerous telephone companies with respect to operating problems as they see them. Leading off this compendium is an analysis of views recently expressed by several top officials of the Bell system regarding developments in space communications. There is also to be found an excellent statement by the chairman of the board and chief executive officer of the largest of the independent telephone company systems, Donald C. Power, of General Telephone & Electronics Corporation. Following that, a number of other messages from officials of smaller independent companies round out a picture which we feel our subscribers will find truly representative.

JAMES W. COOK



C. C. PEARCE

THE USITA meeting in Chicago this month will be the sixty-third annual assembly of this national independent telephone group. Not many industrial associations in the United States can match that record of unbroken longevity. We salute the USITA on this long succession of meetings devoted and dedicated to the welfare of the national independent telephone industry.

As these lines were written, the first vice president of USITA was C. C. PEARCE, president and general manager of Farmers' Telephone Company of Riceville, Iowa. He is also president of the Plymouth Telephone Company and Lime Springs Telephone Company. And if the custom of the past thirty years is followed, MR. PEARCE will be president of the USITA by virtue of election at the Chicago meeting about the time this issue is distributed.

MR. PEARCE's career in the telephone business started twenty-three years ago. He is a member of the board of directors of the Iowa Independent Telephone Association and has served two terms as president. He has served on the board of directors of the USITA since 1947. He is chairman of the USITA Advertising Committee. He has appeared as speaker

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UNITED UTILITIES SYSTEM
Map showing general areas of operations of United Utilities subsidiaries. Symbols represent number and approximate location, only, of communities served.
Telephone
Electric, Gas or Water
L P Gas
Corporate Headquarters
Operating Headquarters

Operating telephone, power, natural gas, water and propane companies in 16 states, the United Utilities System possesses both service and geographical diversification. With total customers numbering in excess of 525,000, the plant dedicated to telephone service accounts for 85% of the assets of this $156,000,000 corporation. From seven operating headquarters and through 445 exchanges, modern communication service is uniformly offered to over 475,000 subscribers.

An indication of System growth and progress, the last decade has seen the number of customers increase by 391%, plant investment by 260%, and operating revenues by 236%. Together with this pattern of growth, the modernization program of the telephone properties has succeeded in raising the percentage of dial operation from 10% in 1950 to 78% in 1960. New methods and modern equipment have made possible the efficient operations that have prevailed throughout this period of growth and progress.

at a number of state telephone conventions and also at the national convention. He has, from time to time, contributed articles to trade journals.

* * * *

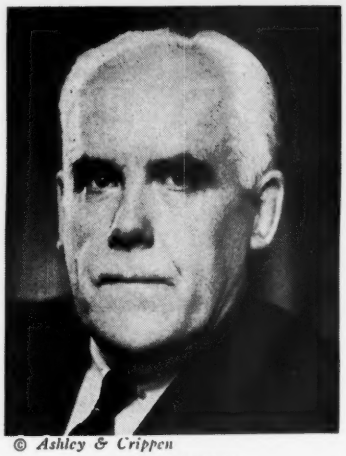
THE part which regulated industry plays in national economy growth may be quite generally overlooked. We have a thought-provoking article on that subject in this issue, beginning on page 605, which comes to us from JAMES W. COOK, vice president in charge of public relations for the American Telephone and Telegraph Company. He began his Bell system career in 1929 with the New Jersey Bell Telephone Company after graduating from Yale. He also served with two other Bell system companies, Pacific Telephone & Telegraph Company and Northwestern Bell Telephone Company, before returning to AT&T in 1954 as vice president in charge of revenue requirements. He was also vice president in charge of merchandising and marketing before his assignment to the public relations post just a year ago.

* * * *

T. W. EADIE, president of The Bell Telephone Company of Canada, whose article on "Communications in Business" begins on page 609, has spent an entire business career with the Canadian Bell company. He was born in Ottawa in 1898 and graduated from McGill University as a civil engineer in 1923, after serving with the Royal Canadian Naval Air Service during World War I. Since joining Bell of Canada in 1923, MR. EADIE was successively promoted until he achieved the presidency in 1953 and was made chairman of the board in 1957. He is a governor of McGill University and has an honorary degree of Doctor of Laws from the University of Montreal.

* * * *

ANOTHER article which our telephone industry readers and others may find of interest is the one, beginning on page 627, by JAMES H. COLLINS, Washington, D. C., business writer. He tells of the planning and the operation of the Bell system's "Garden" for growing its man-



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T. W. EADIE

agers of tomorrow. It is often overlooked among the duties of management, but it is nevertheless true that a most important duty is to reproduce itself. This means the creation of a system for developing supervisory people who will be competent to take care of the peculiar needs of the future—even to the extent of problems which may not actually exist today—but which can be definitely foreseen.

* * * *

THE word "communications" is a much used word. Yet it means so many different things to different people: a letter, an interoffice memorandum, a telegram, a telephone message, or radio signals. All are communications of a sort. Beginning on page 619, FRANCIS X. WELCH, editor of PUBLIC UTILITIES FORTNIGHTLY, has undertaken to sketch in broad outline the place which the telephone industry as such may have to carve out for itself in the increasingly complex area of technical communications in the future. Space communications already have become an important and serious problem for the communication industries, as evidenced by the utilization of satellites and the moon for radio relay and the work being done in the tracking of missiles to outer space.

THE next number of this magazine will be out November 10th.

The Editors

A product of Chrysler Corporation

ughest trucks Dodge has ever built. With tight-fisted Cummins diesels nickel-pinching Dodge V-8 gasoline engines. Real misers with fuel. And lt to give you the biggest payloads in the business. In cab forward dels like this one, 28″ from bumper to front axle and 89¾″ BBC, allows -ft. trailer in 45-ft. over-all length, 40-ft. trailer in 50-ft. over-all length. clusive swing-out fenders and 90-degree-opening hood permit "walk- maintenance and engine servicing. '61 Dodge trucks are rated from 00 lbs. GVW to 76,800 lbs. GCW. Priced to compete with any truck ning or going. Toughen up <u>your</u> fleet. See your Dodge dealer now!

DODGE BUILDS TOUGH TRUCKS

Coming in the Next Issue...

(NOVEMBER 10, 1960 ISSUE)

WHAT'S IN STORE FOR PUBLIC UTILITY FINANCING? PART I.

Are public utility stocks too high-priced? Will the utility companies have to pay much higher average costs for senior securities in the sixties than in the past two decades? These are some of the questions examined in the first of a two-part article on the outlook for public utility financing by Fergus J. McDiarmid, vice president of The Lincoln National Life Insurance Company. As the representative of a large institutional investor, this veteran analyst of utility securities from the investment point of view has made some very thoughtful observations on what is in store for utilities on the financial front.

WHY FIGHT IT?

It has now been more than six years since the U. S. Supreme Court handed down its historic decision in the Phillips Petroleum case, under which natural gas producers were put under the regulation of the Federal Power Commission. Yet, despite the failure to obtain legislative revision and loss of political support for such a movement, there are still gas producers who refuse to concede that such regulation is inevitable. Willard W. Gatchell, retired general counsel of the Federal Power Commission and a veteran of many a court, commission, and committee appearance on this question, gives some good, solid reasons in the interest of the gas producers themselves why they should try to live with regulation instead of fighting it.

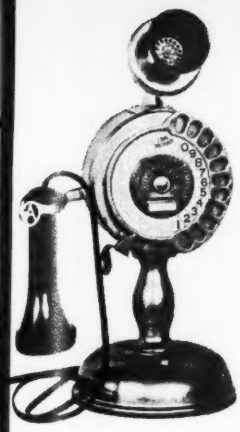
ECONOMIC JUSTICE AND THE COST OF UTILITY RELOCATION

If public works such as highways require the moving of reusable utility plant, a reimbursement for the "up and down" labor is justified. If a replacement facility must be built, the utility should be paid for the cost of the replacement facility and the removal of the old facility. These and other factors involved in the relocation of utility plant because of highway and other public works construction are discussed from a very practical standpoint by Robert H. Sarikas, electrical engineer, Illinois Power Company.

UTILITY ADDRESSES BEFORE THE PUBLIC UTILITY LAW SECTION, AMERICAN BAR ASSOCIATION—APPENDIX

Important addresses on developments during the past year, as well as on current and future problems in the field of regulatory law, were delivered before the annual meetings of the Public Utility Law Section, held in Washington, D. C., August 29th and 30th, contemporaneously with the national convention of the American Bar Association. Full text of these papers will be reprinted in the November 10th issue of PUBLIC UTILITIES FORTNIGHTLY.

AND IN ADDITION . . . *Special financial news, digests, and interpretations of court and commission decisions, general news happenings, reviews, Washington gossip, and other features of interest to public utility regulators, companies, executives, financial experts, employees, investors, and others.*



56 STEADY STEPS OF PROGRESS 1904 TO 1960

The Lincoln Telephone and Telegraph Company, largest Independent telephone company in Nebraska, serves 145,000 telephones—about one-fourth of the telephones in this state. It operates 126 exchanges (107 dial, 19 manual) in the southeast 22 counties of Nebraska, an area rich in farmlands and expanding irrigation and industry. Lincoln, its largest exchange, is Nebraska's capital city.

Here is a progress report from 1956 which typifies L T & T's steady, stable growth: 16,000 telephones added, 20 exchanges converted to dial operation—2 new exchanges established—7 major buildings constructed, including a new 9-story general office and equipment building at Lincoln—direct distance dialing established for 29 exchanges—microwave radio relay service connections established for message toll service between 24 exchanges —data processing equipment to provide mechanized billing, inventory control, payroll and labor distribution. The company has direct connections with the national toll dialing system, the transcontinental radio relay system and underground toll cable.

Target date is 1964 for 100% dial operation with direct distance dialing! This will require the construction of 9 major buildings, conversion of 19 exchanges to dial service and expansion of microwave, distribution, central office and other facilities.

Reflecting the results of growth, new methods of efficiency and active merchandising, operating revenues increased from $7,597,000 to $8,228,000 in the first 7 months of 1960. This $58,000,000 company has doubled its investment in the last eight years to stay ahead of service demands and keep pace with modern operations . . . completes 7,000,000 toll messages annually . . . proudly cites these 4 services as pioneering "FIRSTS" in Nebraska: dial service!—operator toll dialing!—direct distance dialing! —mobile radio telephone service!

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The Lincoln Telephone and Telegraph Company

Remarkable Remarks

"There never was in the world two opinions alike."
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EDITORIAL STATEMENT
The Wall Street Journal.

". . . government gifts all wear a high price tag and the ultimate accounting for state controls is always a people's freedom."

RAYMOND MOLEY
Columnist.

"So-called liberals in Congress are passing legislation that is putting the burden of taxes on the man in the street. . . . You can't have government aid in abundance and not lose some of your liberties."

CLIFTON FADIMAN
Literary critic.

"The average high-school graduate does not know who he is, where he is, or how he got there. In accordance with his luck and his temperament he may become happily lost or unhappily lost. But lost he will become. Lost he will remain. Lost he will die. And if we allow those lost ones to multiply indefinitely, they will see to it that our country will be lost also."

W. F. ROCKWELL, JR.
President, Rockwell Manufacturing Company.

". . . it is easy to spot those men who have not only the knowledge and intelligence to understand a problem and develop possible answers, but who also have the courage to decide and to act on their own initiative, without either attempting to dodge the issue or to pass the responsibility up to their superiors. It is this latter ability—this disciplined blending of judgment, courage, and initiative—that constitutes the 'Managerial Maturity' without which no manager can really manage."

FREDERICK R. KAPPEL
President, American Telephone and Telegraph Company.

"We need only look at the record to know that private enterprise has given this country the finest, the most complete, the most dependable communications system in the world. I strongly believe that private enterprise will also keep this country out in front in space communications, just as we have led the way on land and sea. It was the Bell system, I may remind you, that pioneered world-wide telephony, first by radio and later through cables. We want and intend to be pioneers tomorrow, too. We are ready, willing, and able to push ahead. All we need is the leeway, the freedom, to do our best."

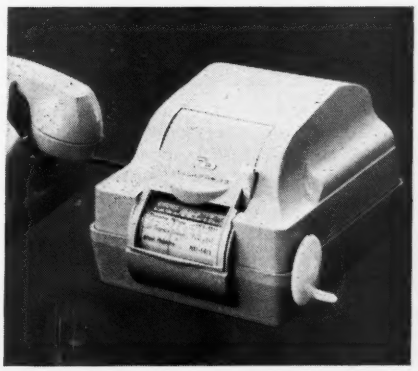
DON G. MITCHELL
President, General Telephone & Electronics Corporation.

"If management fails to apportion the benefits of greater productivity on a fair-sharing basis among share owners, employees, and customers; if labor takes all of the productivity increases in the form of higher wages; if government keeps increasing the tax load without making sure that it has first eliminated waste and extravagance of its present tax revenues—there won't be anything left for anybody. There isn't any bottomless bucket of gold in this economy or any other economy—and if we all don't realize that, and work together, we will end up with a depression that will make 1929 look like a picnic."

SAM SUBSCRIBER may have *DIALITIS!*

Sam places dozens of phone calls daily – many to the same customers, suppliers or branch offices. Dialing each number every time he calls, Sam now exhibits the undeniable symptoms of DIALITIS: strain of the patience... fatigue of the index finger... wrong numbers... pinched profits through lost time. But there is one sure cure – DIALAPHONE – the electro-mechanical wonder which dials numbers automatically with one touch of its magic key, while it further serves as a handy directory and infallible memory for hundreds of numbers.

Only *you* can provide Sam with this relief. For DIALAPHONE is available to him *only* through telephone operating companies such as yours. Sam *needs* DIALAPHONE! And, of course, the better you serve him, the better you serve yourself in revenues and public relations.



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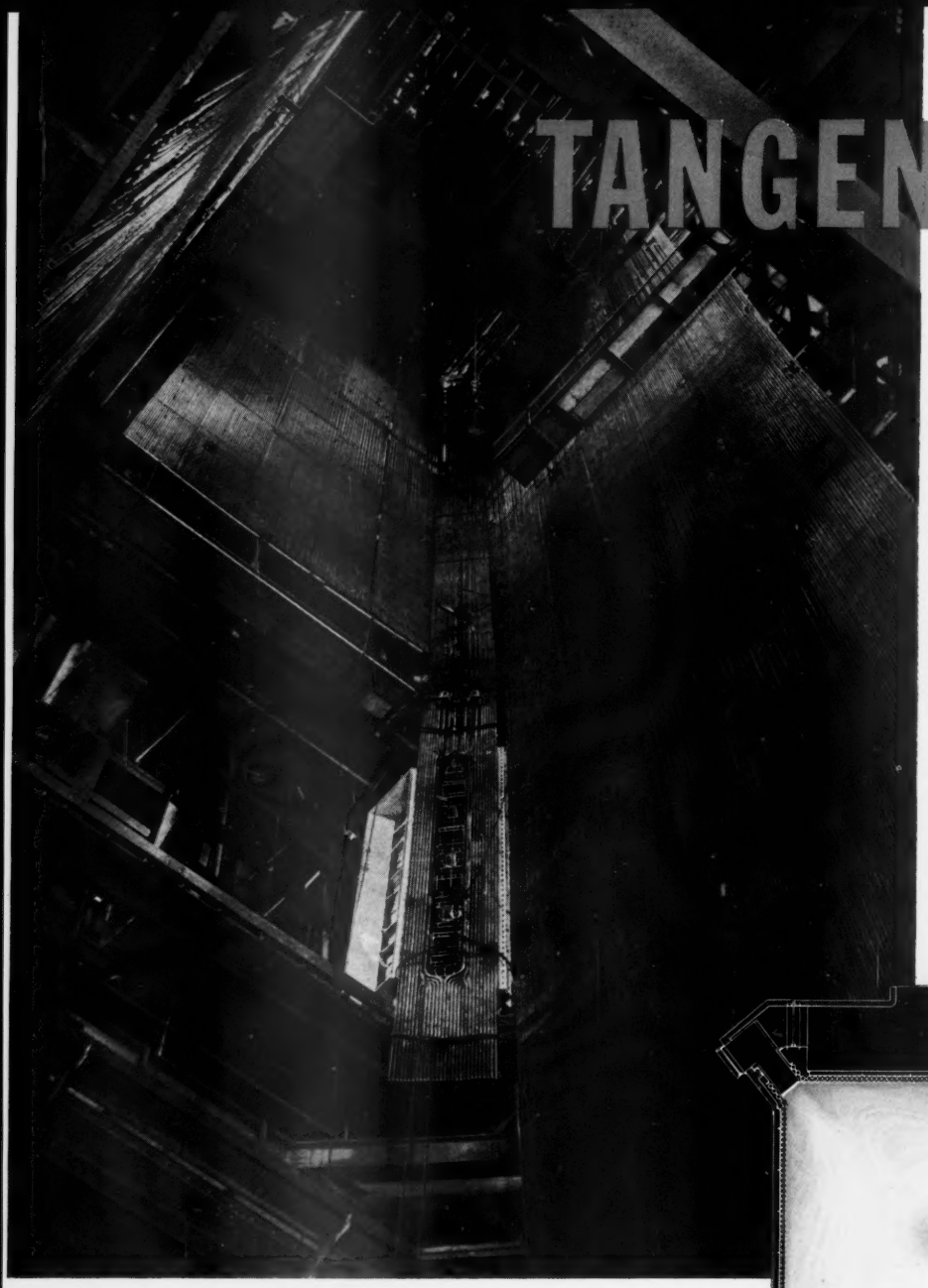
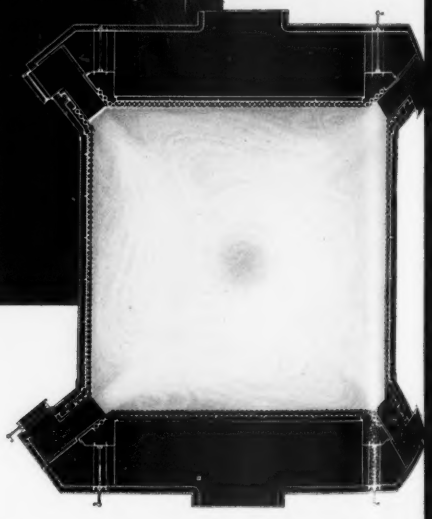


TANGENTIA

Looking up into the furnace of a C-E Controlled Circulation Boiler. One of its four Tilting, Tangential Burners is being moved into position. The burner and its adjacent water wall tubes are shop assembled into a single panel and handled as one piece. All four corners of the furnace are similarly equipped. Tangential burners may be arranged to burn coal, oil or gas separately or in combination.

Sectional plan view thro tangentially fired fur showing impinging ac of fuel streams from burners which results extreme turbulence thorough mixing of and air.



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Tangential firing – an exclusive C-E development–was introduced by Combustion in 1927. The tilting feature of the burner nozzles, for control of superheat temperatures, was added to the basic design in the late thirties. Among the many proven advantages of the C-E Tilting, Tangential Burner, those enumerated below are especially noteworthy – whether the fuel be coal, oil or gas, or combinations thereof.

Combustion is better

1. The extreme turbulence created by impinging flame streams of adjacent burners assures the most effective mixing of all the air with all of the fuel to produce the most rapid and complete combustion. Minimum carbon loss is assured.
2. The swirling rotating travel of combustion gases fills the furnace cross-section and utilizes the heat absorbing wall surfaces most effectively.

Superheat is controlled

1. If steam temperature goes too high, the C-E Tilting Tangential Burner nozzles automatically tilt downward. More furnace wall surface becomes effective. Gas temperature to superheat surface is lowered. Steam temperature comes down.
2. Conversely, if steam temperature drops below that efficient for the turbine, nozzles tilt upward, sending hotter gases to the superheater. Steam temperature goes up – automatically.

Acceptance is widespread

About 650 tangentially fired C-E Boilers with an aggregate capacity of about 400-million pounds of steam per hour are now in service; another 85 units are under construction or on order. In 1959 alone 31 new C-E Boilers with an aggregate capacity of over 5-million kilowatts were put in operation in electric utility plants. All of these units are tangentially fired.

Thus, tangential firing has established itself in service over a period of many years as the most widely accepted method of firing for big boilers. More recently it has met similar success in smaller oil and gas fired units for capacities as low as 70,000 lbs. of steam per hour. Catalog PC 8 gives full information. May we send you a copy?

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C-E

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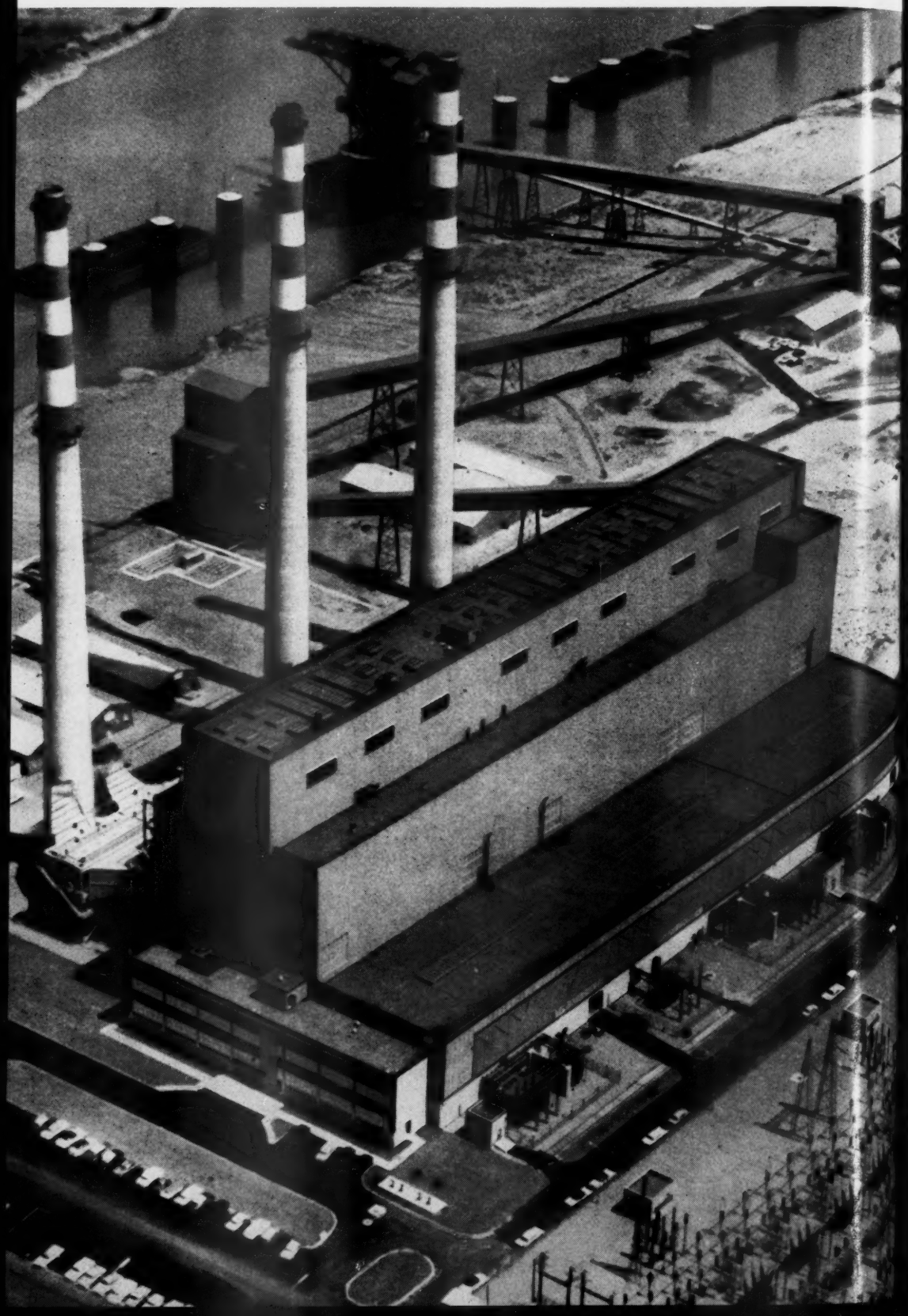
Thos. H. Allen Electric Generating Stati

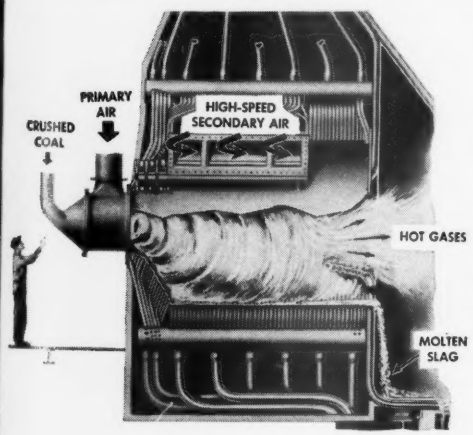


ati[illegible]emphis, Tennessee . . . 6 Million lb of Steam per h

CONDITIONS:	
PRESSURE (TURBINE THROTTLE)	2400 psi plus overpressure
CIRCULATION	Natural Circulation
TEMPERATURE	1053F/1053F
FIRING	Cyclone Furnace
OTHER FEATURES	Gas Tempering

ral circulation is self stabilizing over varied oper- conditions at pressures of 2400 psi and higher—cuts r maintenance—no power loss to circulating pumps.

ember, 1959, saw the third 2 million lb natural circula- boiler on the line in the Thos. H. Allen Electric Gener- Station of Memphis, Tennessee. Although normally ated with 2400 psi at the turbine throttle, these units are capable, by design, of peaking operation at overpressure conditions for maximum kilowatt output as evidenced by actual test results. These units again demonstrate the advantages of natural circulation at the higher operating pressures and temperatures necessary for maximum power generating efficiency. Burning some 300 tons of West Kentucky coal hourly in 21 B&W Cyclone furnaces, the station has a net generating capacity of 812,500 Kw.



s section view of a B&W Cyclone Furnace. Molten slag holds and ash permitting rotary air motion to "wash out" maximum s, and reducing ash in boiler and convection passes. The Cyclone ace handles a wider range of coals, especially in the lower es, and helps reduce fuel-costs and ash handling in power stations s the nation.

Use of natural circulation—which is self-stabilizing under conditions of sudden overload and fluctuations in firing—is possible in the high pressure, high temperature range through B&W's development of the Cyclone Steam Separator. It is this device that provides the steam free head of water for efficient functioning of the natural circulation system. With Cyclone Steam Separators, boilers functioning at the throttle pressures of 2400 psi and higher, provide more efficient operation plus operating and capital economies—factors underscored by carefully considered utility choice.

The City of Memphis' Thos. H. Allen installation is representative of advanced steam generating stations across the nation. Utilizing such B&W design advantages as natural circulation, the Cyclone Steam Separator, the Cyclone Furnace, and gas tempering—these stations are helping to meet the surging needs for electric power.

In planning system expansion, B&W can talk your language in terms of efficiency and future operating economies. You'll find B&W sales engineers ready to work with you at every stage of your planning. The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

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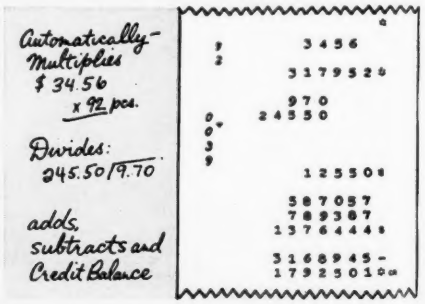

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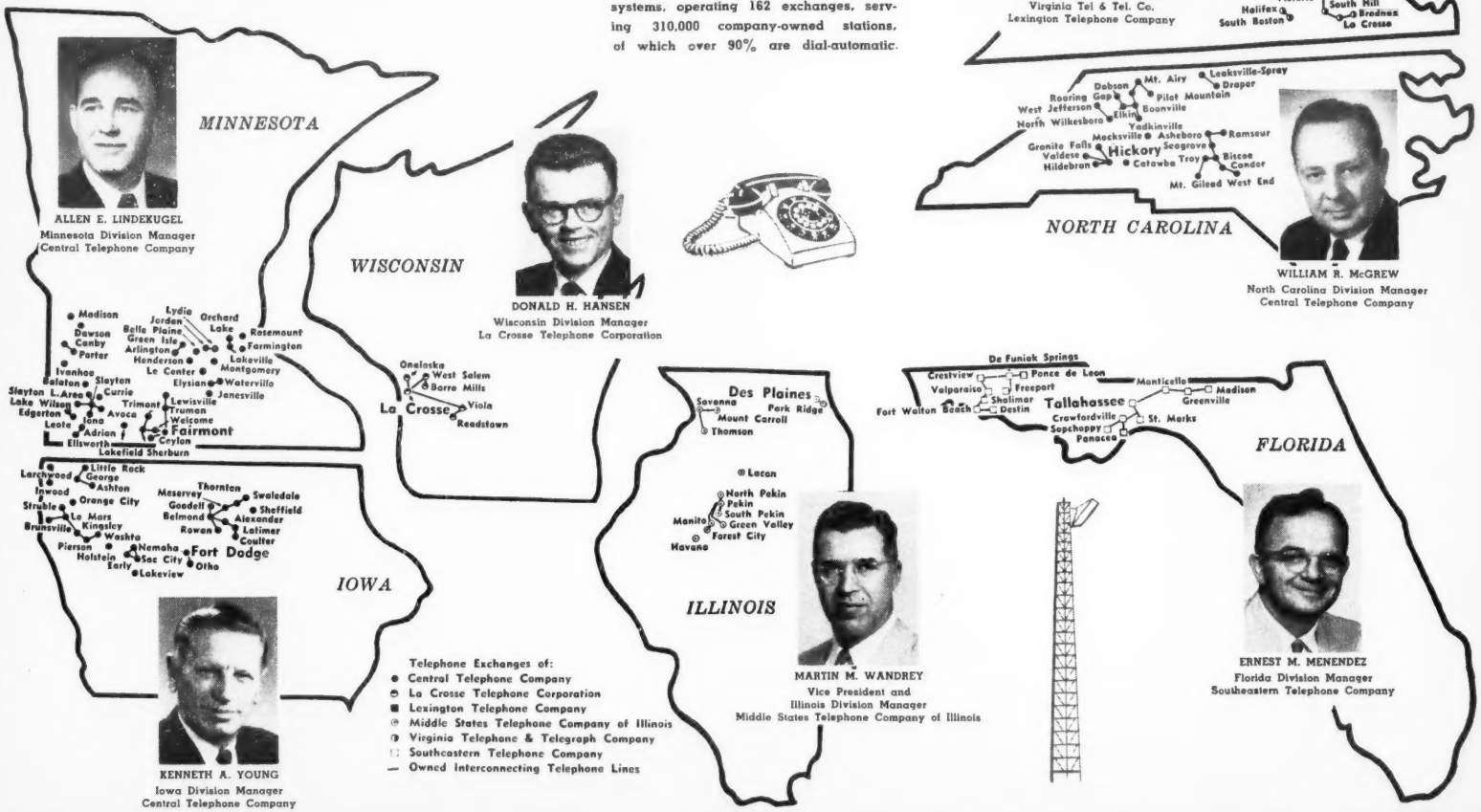

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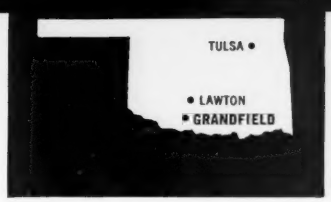
MU-60 6000 KW Diesel
MU-42DF 3000 KW Dual-fuel

MU-80 8000 KW Diesel
MU-56DF 4000 KW Dual-fuel

MU-100 10,000 KW Diesel
MU-70DF 5000 KW Dual-fuel



From Public Service Co. of Oklahoma . . .

Improved Power Service To Grandfield, Oklahoma

In the Southwestern corner of Oklahoma, Grandfield lies at the end of a long 33,000 volt transmission line that starts at Lawton, Okla. 32 miles away. To bring improved customer service to this growing community, Public Service Company of Oklahoma installed a 2000 KW Electro-Motive Diesel plant in June, 1960, to provide area protection and peaking service.

New Plant Proves Its Value

The value of the Electro-Motive plant for area protection was proved only one week after its installation when one of Southwestern Oklahoma's sudden, severe storms caused a loss of power on the line from Lawton. Within 60 seconds, the Electro-Motive plant automatically started, came up to full speed and was supplying Grandfield with adequate power. Again, on August 9, during a period of peaking operation, the 33,000 volt transmission line suffered an outage due to an electrical storm. Automatically the Electro-Motive plant switched from peaking service to isolated operation to supply the area with emergency power.

Maximum Area Protection

The Grandfield area served by Public Service Company now gets maximum area protection in case of line outage because of the special dead load pick-up feature built into the Electro-Motive plant. It can pick-up a dead load with starting in-rush at five times its rated KVA and come back up to full voltage and a steady state condition in 30 seconds. And, the plant will continue to supply power for this load as long as required.

Remote Control Operation

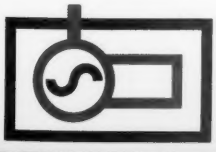
The Electro-Motive plant at Grandfield operates as a peaking unit by remote control. During periods of heavy power use, the unit can be brought on the line from a remote location. On this signal, the unattended plant automatically starts, synchronizes and goes on line in less than two minutes.

Adaptable To Many Functions

The inherent design characteristics of the Electro-Motive equipment at Grandfield that make it ideal for peaking and area protection also make it possible for Public Service Company to add additional generating units in the future to bring the plant up from 2000 KW to 8000 KW. And, they can do this at low incremental cost when load growth occurs. These characteristics of Electro-Motive plants make them best suited for many of your system requirements, too:

- fast start for spinning reserve
- automatic dead load pick-up for area protection
- unattended operation for remote peaking service
- portability for simple installation
- freedom from damage to components caused by rapid thermal changes occurring from start to full load

Available in units from 2000 KW to 10,000 KW, the Electro-Motive peaking equipment line contains both Diesel and dual-fuel plants that can permit matching the plant to exact requirements for the most economical and efficient operation at the lowest investment. Ask your Electro-Motive representative for complete details.



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"Logically, then, the more em...ployee... have enrolled, the greater our own ...enefit... be. So I began wondering *how m...any* o... people were subscribers. When I ch...ecked, ... the surprise of the week—less than 30%!

"Of course, we have a certain amount of ... over: new people coming in constantly...; ... leaving for other jobs. Then, too, many o... employees just never got around to signing ... handy little card.

"Right away I talked with our State Sa... Bonds Director. With his help we carried ... Payroll Savings Plan story to *every* pers... our firm. You know, Bill, people like to b... vited, *personally*, to join a group like this.

"Our response to this friendly canvass ... amazing. Now we have better than 45% o... staff enrolled—and the percentage is ga... every payday."

If *your* company has less than 50% empl... participation in the Payroll Savings Plan, ... are missing substantial benefits. Contact ... State Savings Bonds Director for en... friendly help in making a person-to person ... vass in your company.

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offer simplified design; lower cost

plification of G&W's original Type AT pot- d design has resulted in lowering costs of the high voltage pothead line, ATA-N and ATL-N. outstanding mechanical and electrical charac- stics which have been responsible for the fine formance of the original Type AT potheads e been retained. Maximum interchangeability parts is one of the advantages gained by the- plified design. Also, the use of a straight- ough type ferrule provides a more stable con- tion to the overhead line.

new means of retaining gaskets is a definite rovement in sealing against high pressure. cessful tests up to 750 psig of hydrostatic pressure indicate that these improved G&W Potheads have superior performance characteristics under operating static heads in excess of 200 psig (nominal).

Type ATA-N and ATL-N potheads are another example of the constant improvement being made in G&W products. Their performance and dependability is based upon G&W's thorough understanding of electrical and mechanical requirements for cable accessories gained from 55 years of engineering development, testing, and operating experience. Consult with a G&W Representative on your present and future cable termination needs, or write us for full information.

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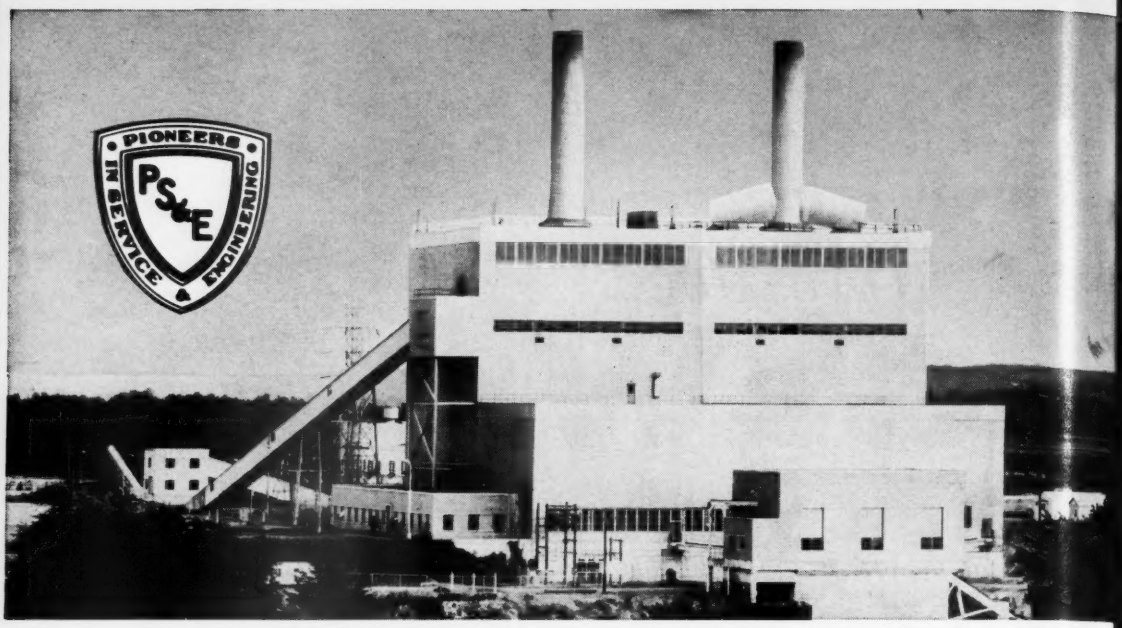
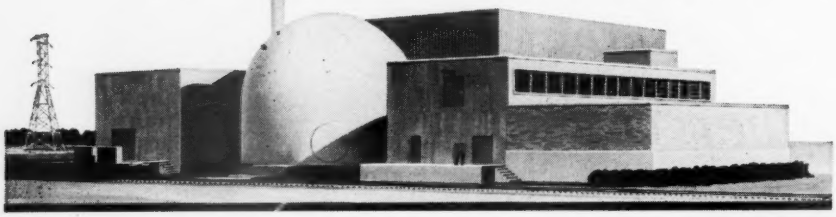


Which Pioneer service do you need to complement your own staff?



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Pioneer specializes in designing power plants and offers design service for fossil fuel, hydro and atomic plants. It will also assist in forecasting load growth, in site selection, in purchasing and expediting of equipment and construction management. Pioneer's other services include substation, transmission and distribution studies and design.

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Pioneer offers its services in all phases of Federal, State and local utility regulation, including natural gas and electric rate matters, certificate proceedings, licensed project accounting requirements, depreciation studies for rate case and income tax purposes, cost allocations and special studies.

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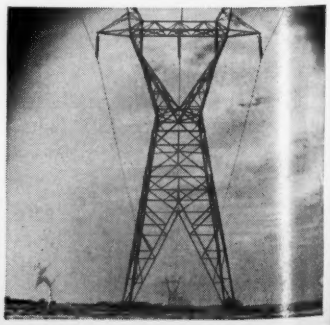

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Utilities Events Calendar

CHECK THESE DATES:

Oct. 27-28—Edison Electric Institute, Statistical Committee, will hold meeting, Hot Springs, Va.

Oct. 27-28—Pennsylvania Electric Association, Transmission and Distribution Committee, will hold fall meeting, Hagerstown, Md.

Oct. 27-28—Virginia Telephone Association will hold annual convention, Roanoke, Va.

Oct. 28-Nov. 2—Air-Conditioning and Refrigeration Wholesalers will hold convention, aboard *S. S. Hanseatic;* sails from Ft. Everglades, Fla.

Oct. 31-Nov. 2—Institute of Radio Engineers will hold fall meeting, Syracuse, N. Y.

Nov. 1—New England Gas Association, Operating Division, will hold meeting, Hartford, Conn.

Nov. 2—Public Utilities Association of the Virginias will hold accident prevention round-table conference, Roanoke, Va.

Nov. 2-3—American Association of Advertising Agencies, Eastern Region, will hold annual conference, New York, N. Y.

Nov. 2-4—Edison Electric Institute-American Gas Association, Taxation Accounting committees, will hold meeting, Sea Island, Ga.

Nov. 3-4—Ohio Association of Broadcasters will hold fall convention, Columbus, Ohio.

Nov. 3-4—Pennsylvania Electric Association, Relay Committee, will hold meeting, Lancaster, Pa.

Nov. 5-6—Missouri Broadcasters Association will hold meeting, St. Louis, Mo.

Nov. 7-11—National Hotel Exposition will be held, New York, N. Y.

Nov. 9-10—Georgia Telephone Association will hold annual convention, Atlanta, Ga.

Nov. 9-10—New Jersey Utilities Association will hold annual meeting, Absecon, N. J.

Nov. 9-10—Oklahoma Telephone Association will hold annual convention, Oklahoma City, Okla.

Nov. 9-11—American Institute of Electrical Engineers will hold second power industry computer application conference, St. Louis, Mo.

Nov. 9-11—American Water Works Association, North Carolina Section, will hold annual meeting, Winston-Salem, N. C.

Nov. 13-16—Association of National Advertisers will hold annual meeting, Hot Springs, Va.

Nov. 13-16—American Water Works Association, Florida Section, will hold annual meeting, Fort Lauderdale, Fla.

Nov. 14-15—Pacific Coast Electric Association, Administrative Services Section, will hold meeting, Phoenix, Ariz.

Nov. 14-16—American Petroleum Institute will hold annual meeting, Chicago, Ill.

Nov. 14-16—Broadcasters' Promotion Association will hold annual convention, New Orleans, La.

Nov. 14-16—Edison Electric Institute, Accident Prevention Committee, will hold meeting, Buffalo, N. Y.

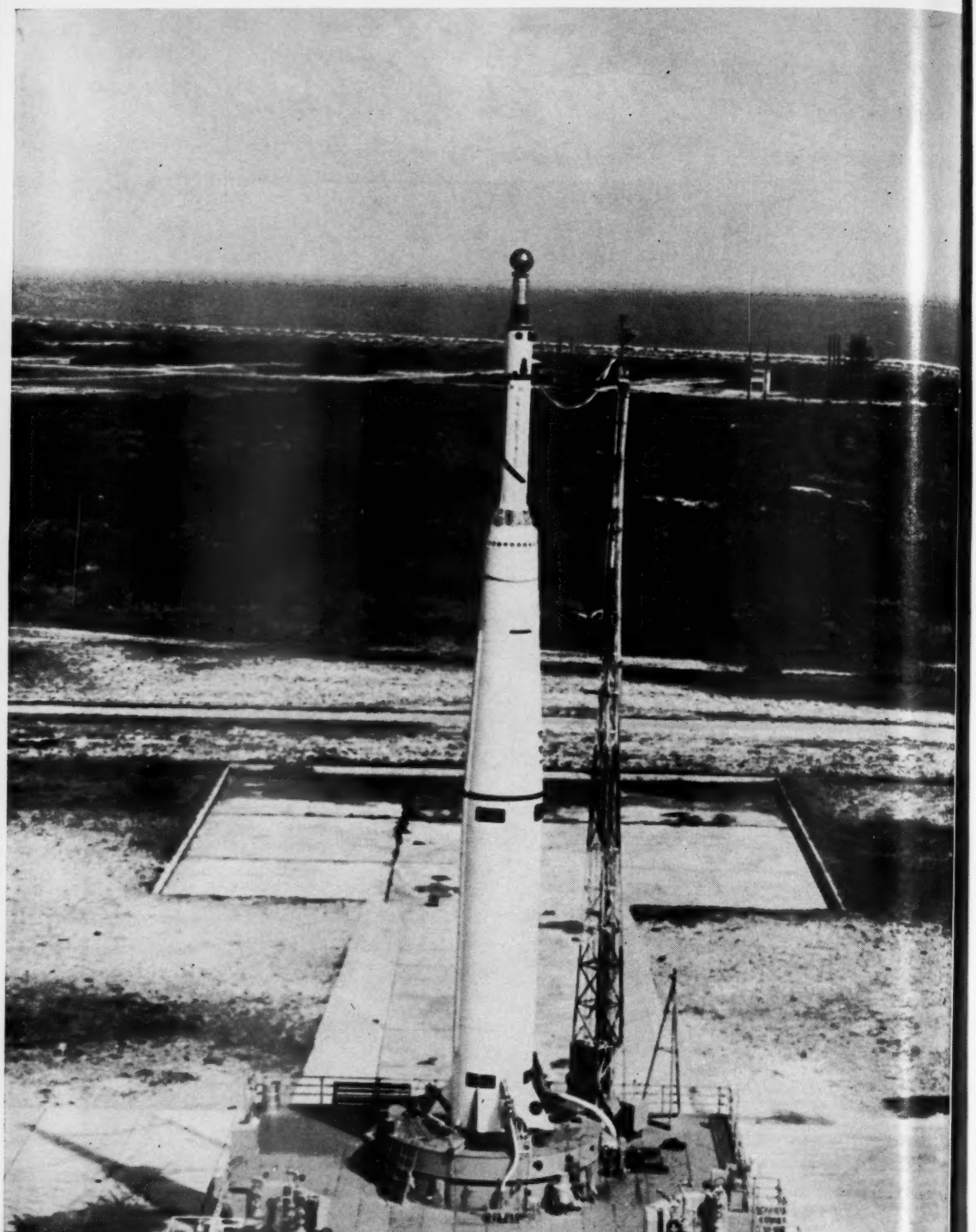
Nov. 14-16—National Fire Protection Association will hold fall conference, Columbus, Ohio.

Nov. 14-17—National Warm Air Heating and Air Conditioning Association will hold annual convention, Cleveland, Ohio.

Nov. 14-18—National Electrical Manufacturers Association will hold annual meeting, Atlantic City, N. J.

Nov. 15-16—National Gas Pipeline Institute will be held, Liberal, Kan.

Nov. 16-18—National Reclamation Association will hold annual convention, Bakersfield, Cal.



Courtesy, National Aeronautics and Space Administration

Where Echo I Took Off

This is the Douglas-built Delta launch vehicle that orbited Echo I into space. A 28-inch container weighing 24 pounds held the folded 100-foot deflated aluminum-coated sphere that expanded later into the world's first reflector satellite.

Public Utilities
FORTNIGHTLY

VOLUME 66 OCTOBER 27, 1960 NUMBER 9

The Telephone Industry Welcomes More Co-operation

By C. C. PEARCE*
First Vice President, United States Independent Telephone Association

The fast burgeoning telephone industry is certain to present independents, REA, and Bell with an increasing number of problems. In the interest of best serving the public during this dynamic period of exploding demand and marvelous forward technological stride, it is imperative that all segments of the communications picture coordinate their efforts and co-operate to the fullest.

PRESIDENT Eisenhower once referred to the telephone as "a common miracle." Today, this "common miracle" is rapidly moving into one of the most fascinating and promising eras in the history of voice communications. In research laboratories and in the field, vast new dimensions are unfolding for telephony, revealing a broad array of opportunities for creative cost cutting, system growth, and corporate prosperity.

The independent segment of the telephone industry alone, by the nature of its business, and by the fact that its nearly 12 million telephones serve 11,000 communities in over one-half of the nation's land area, has an enormous stake in the outcome of these far-reaching developments. Each potential benefit is a sound

*Also president and general manager, Farmers' Telephone Company, Riceville, Iowa. For additional personal note, see "Pages with the Editors."

reason for maintaining and strengthening independent telephony's position as a $3 billion "home town" industry.

In independent markets the total population is growing by the second. People are continually relocating and creating demand for communications service, often where such demand did not exist before. Municipalities, railroads, power utilities, and other enterprises are constantly promoting the advantages of available sites, with the result that diversified industries are building and staffing new plants in hundreds of out-of-the-way hamlets, villages, and small towns—the very birthplace and present-day stronghold of independent telephony.

In addition to enjoying the economic benefits of these products of America's industrial revolution, independent telephony plays a vital rôle in the nation's growing systems for defense communications, serving missile and rocket-testing bases, military bases, and early warning communications systems. Recent successful experiments with microwave and orbiting satellites for global communications are an exciting presage of things to come when telephony moves its circuits to outer space.

A Task for the Whole Industry

Continuing contributions to the dynamic growth of telephony are not the responsibility of any particular group or section of the industry. They are the responsibility of every company in the business. And the challenge they face is simply: more service and better service at the customer level.

In order to meet the higher standards of communications service that will be expected and needed by tomorrow's subscribers, the whole industry must gear itself for maximum unity in all matters pertaining to mutual success. In this area the categories range from research and technological advancements to impregnable public confidence in the distinctive, high-quality service rendered by America's privately owned and operated telephone facilities.

This need for industry-wide co-operation has been brought about, in practically every instance, by factors related to natural growth within the industry, or through electrical and electronic developments and improvements. Here, in brief, are some of the common problems whose solution depends upon the united thinking and action of all elements concerned:

Direct Distance Dialing

In the interest of telephone service designed for the requirements of our fast-growing, space-age economy, direct distance dialing should be looked upon as one of the great and urgent goals of the industry. DDD facilities should be made available to every one of the nation's tens of millions of telephones.

Obviously, close co-ordination between all segments of the industry—independents, REA, and Bell—will be required to solve the problems of uniform telephone numbering, equipment at local central offices and toll switching points, automatic recording equipment, and adequate toll circuits.

Such co-ordination also must be directed toward the creation of public understanding and appreciation of DDD techniques and advantages.

THE TELEPHONE INDUSTRY WELCOMES MORE CO-OPERATION

Competitive Services

IT is a concept of long standing that telephone companies represent a monopoly and, consequently, competition with them does not exist. This view is rapidly being proved wrong. Actually, both large and small companies face considerable competition. And this competition is of such diversity and magnitude that existing service offerings may be endangered unless steps are taken to meet the specific communications needs of residential and business subscribers. Here, again, the need is for intensive industry-wide co-operation and regearing of operations.

Transmission Improvement

UNDER the impact of the industry's dial conversion and DDD programs, good circuit performance is becoming increasingly important. Improved transmission between customers has demonstrated its ability to step up calling rates on all classes of service and produce additional revenue. It is good business, therefore, that toll circuits in toll centers be properly balanced to avoid transmission losses in and through the offices.

All exchanges should be equipped to give satisfactory loop facilities, and we must all strive for the minimum decibel loss that will provide satisfactory transmission both on local and long-distance service.

Such transmission standards make it imperative that every effort be employed to achieve the objective. Every company and every office must do its part.

Excise Tax

DETERMINED customer resistance to the discriminatory federal excise tax is highly essential, and must be stimulated if the industry is to be successful in accomplishing its removal and preventing its replacement by some other form of tax that is more atrocious and unfair. An effective solution to this problem will be found only in persistent and intensive print and person-to-person programs conducted by both independent and Bell systems.

This tax will be removed very quickly when the millions of customers we serve decide that they have paid a wartime tax long enough.

Marketing and Merchandising

NEW ideas and methods in marketing, merchandising, and public relations —supported by advancing technology— are needed to curtail dependence on periodic rate boosts as a means of maintaining or increasing earnings. Customer understanding and good will and ever-broadening use of basic services must, as far as possible, carry the load of providing operating companies with their proper share of the customer's dollar.

To bring this about, aggressive institutional and human-contact programs should be developed for every exchange area. Such activity should be pointed to develop continuing customer acceptance of and reliance upon complete telephone service— to promote the "common miracle" as a versatile, indispensable, and economical right-hand man of home and business life, rather than a mere convenience for talking from here to there.

Extended Area Service

THE easier it is for the telephone customer to call outside the local area, and the less conscious he is of the extra cost involved, the more service he will use. A forward step in this direction would be the minimization or elimination of the reluctance and negative thinking associated with the cost of making frequent toll calls.

This industry-wide problem deserves continuous study as to the desirability and feasibility of allowing flat rate calling on a zone, regional, area, or statewide basis.

Mark Sensing of Toll Tickets

MECHANIZED accounting and billing procedures are developing at a rapid rate. With the introduction of mark sensing—which is related to informing the accounting system of the number placing the call—close co-operation will be a must for all participating companies. To bring the proper speed, efficiency, accuracy, and economy to a "bookkeeping" operation involving the ceaseless handling of hundreds of millions of transactions, the industry's differences in accounting procedures, billing forms, and telephone numbers must be resolved.

THE foregoing problems are by no means the sum total of the problems concerned with the shaping of the new world of telephone communications. For operating companies large and small it will be a time of administrative and technological evolution—a massive program involving co-ordination of equipment, circuitry, techniques, and procedures on a scale that reaches far beyond today's concept of service. To guide such a program only one word is needed, and that word is "teamwork." Only by working together closely will it be possible for the industry to meet the challenge of the sixties.

The end result is vital to the telephone industry and to the nation's economy. The job is big, but so are the rewards.

The Impact of Regulated Industry on the National Economy

A plea for wider public recognition of the part played by regulated industry in keeping up the pace of our dynamic economy in the United States.

By JAMES W. COOK*
Vice president, public relations, American Telephone and Telegraph Company

It seems to me that something is missing in the trade journals of regulated industry today. And the same thing is missing in the talks and writings of many people in regulated industry. Certainly it is missing in the daily press.

The missing element is discussion of the part regulated industry plays in national economic growth. With rate exceptions, such as followed the recent success of the communications satellite Echo, the public tends to overlook contributions to growth made by regulated companies.

National growth is, of course, the business of the businessman, and particularly of the utility man. We have fostered it, planned for it, and fought for it ever since modern business emerged from the industrial revolution.

Yet a stranger to our economy might never find this out from the daily papers. He might think the people most interested in economic growth are candidates for public office, not businessmen.

The First National City Bank's monthly letter calls economic growth "the newest magic phrase" for politicians in this election year. The platforms of both political parties stress the need for more growth. The Democratic party platform pledges a growth rate of 5 per cent a year, "almost twice as fast as our average annual rate since 1953."

Never has public interest in growth been higher. And never has regulated industry had a more vital and relevant contribution to make in a national debate.

The rôle regulated companies have played and will play is basic in the nation's growth. A look at the record proves this.

Growth in the Phone Industry

If I may use my own business as an example, let us look at that record.

*For additional personal note, see "Pages with the Editors."

The Democratic pledge of a 5 per cent growth rate would add up to slightly less than a two-thirds growth in ten years. The telephone industry has met that goal in the past ten years, and given the country a dividend by exceeding it. I expect the same is true of the electric and gas companies.

To compare our growth with that of other industry, the Gross National Product has slightly more than doubled since 1945. In that time the Bell system has much more than tripled, whether you measure it in plant, sales, or wages and related expense.

This telephone growth has affected the prosperity of many other industries, from banking to bricklaying.

For example, last year the Bell system paid more than a thousand general contractors to put up about 1,500 new buildings and building additions. This meant about three million man days of work for people in the construction trades.

In shipping raw materials to the factories, and finished telephone apparatus to places where it is needed, our use of transportation facilities is enough to provide 20,000 full-time jobs in that industry.

Our motor fleet of 90,000 vehicles means jobs in Detroit. The 75 million gallons of gas they use, furnish work for oil men in Texas.

Western Electric purchases provide about 8,000 jobs in just the printing and paper industries alone. In fact, the purchases of Western Electric last year amounted to more than a billion dollars, and went to 35,000 suppliers in 3,000 towns and cities across the country.

All Bell system expenditures, if projected as a percentage of the GNP, would support the employment of nearly half a million people.

The same kind of contribution to growth is made by other regulated companies.

I saw recently in a magazine of the power industry, for example, that the electric companies bought $2 billion worth of apparatus last year from the competitive electrical equipment manufacturers alone.

Prosperous Regulated Companies Foster Prosperity

In many ways, regulated companies help the general prosperity. Their services are, of course, vital to growth. These services bring efficiency to every business and comfort to every home. In fact, it is hard to imagine any substantial national growth without growth in the services of regulated companies.

Beyond this, the availability of these services is broadened by their prices, which are generally lower in real dollars than they were before the war.

In research, we stimulate growth. James H. Collins once told in this journal of a visit years ago to the Bell Laboratories, where Dr. Frank Jewett let him listen to an early electronic recording of a symphony in Carnegie Hall.[1]

"The phonograph people have been coming in here, listening, going away to talk it over, coming back . . . " Jewett told him.

Commenting on this, Collins said, "That was 'Hi-Fi' in its birthday suit, and the forerunner of tape recordings, broadcast programs, news reports. . . .

[1] "Mother Bell Needs Some New Friends," by James H. Collins, Public Utilities Fortnightly, Vol. 64, No. 9, October 22, 1959, p. 706.

Radio itself was still to appear."

Besides leading to improved telephone service, that invention has produced a multitude of jobs and prosperity for many in other industries. Similar examples are numerous. Today no one can guess where research in space communications may lead us. But the possibilities are enormous and it is based on the faith in these possibilities that the Bell system has invested heavily in time and money on project Echo.

The research and capital spending of regulated companies adds stability as well as growth to the economy. This spending is not reduced to as marked a degree as the spending of other industry in recessions. This helps to smooth out the business cycle.

Clearly it is in the national interest to encourage the continuance of these contributions to the country's prosperity.

Profits Are Essential

THEY can only continue, of course, if regulated industry is allowed fair earnings. As every schoolboy knows, the ability to spend is immediately dependent on the amount of money available. This is true of the individual, true in the home, and true in any business. A business with starvation earnings, like a man on his uppers, can hardly contribute significantly to economic growth. This is the kind of company, and man, that requires public handouts. This is not the kind that raises the national sights and the national standard of living.

But beyond this, good profit is the incentive which has spurred American achievements and living standards up to a level which is the ideal of the world.

The search for profit has led to aggressive efforts to find and market better products. It has led to an aggressive attitude toward costs and ways to cut them. It has led to endless analysis of consumer needs and constant seeking of ways to meet them.

The profit motive has been dynamic in its social results. Our future, our economic growth, and national prosperity, will be best served by continuing encouragement of this motive. Its repression can only result in repression of its social benefits.

It seems to me it is time for utility

executives to speak out on this subject. It is, in fact, our duty to do so. It is in the best interest of the country, as well as our businesses.

Yet many utility people seem unwilling to discuss the matter publicly. Perhaps this reluctance springs from an attitude described recently by G. Leslie Fabian in the *Investment Dealers' Digest.*

FABIAN said, "Business in general—and perhaps utilities in particular—too often seem to shy away from the word 'profits,' and the rôle of profits much too often is confused with basking in the sun."

But I cannot believe this is true of any utility officer who has thought the matter through. Managers of regulated companies direct the allocation of a hundred billion dollars of the nation's resources, and the efforts of four million American workers.

CERTAINLY men who mold the goals and guide the effort of such a key part of the economy are the kind of men who will recognize their responsibility to see that public attention is directed to the vital rôle we play in the national growth now being considered.

Certainly they will strive to win recognition of the urgent need that regulated companies have the ability and incentive to continue making their full contribution in this area.

. . . "the federal government and the state have common goals and a common stake in atomic energy. First and foremost, we share the common aim of protecting the health and safety of the public. Our guiding concern in developing the peaceful use of atomic energy must be to assure that development is consistent with the health and well-being of our citizens.

"Implicit in what I have said is our common stake in developing the peaceful uses of atomic energy throughout the free world. The peaceful uses of the atom promise a richer and more abundant life for everyone. Their development is unquestionably our joint responsibility.

"In view of our common goals and aspirations, federal-state cooperation will be a critically important factor in the future of atomic energy. The new federal-state program will permit our states to assume a more positive rôle in nuclear development, and I am confident that—as a result of their diverse ideas and approaches—we may expect important advances in nuclear technology. . . .

"State government is the wellspring of our national vitality and we therefore welcome increased state participation in the atomic energy program."

—L. K. OLSON,
Atomic Energy Commissioner.

Communications in Business

By T. W. EADIE*

President, The Bell Telephone Company of Canada

To provide clear transmission and to see that each message reaches its proper destination is the responsibility of the telephone engineer. The telephone executive has the problem of expressing his thoughts in a clear and understandable way. Communicating is an art and a complicated one. There are telephonic, written, and printed messages to convey as well as face-to-face talks with employees, community groups, and civic leaders. He must not only understand people and know his semantics, but he must also be deft in wielding words in a manner that "gets over" his ideas to those he seeks to influence.

DISCUSSION of communications in business can range far and wide, but there are three aspects in particular I would like to touch upon. First, the technical considerations, such as what information can be transmitted, and how can it best be done. Secondly, the more philosophical problem of the nature of successful communication within a business, which is indeed but the specific application of the general principles of thoughtful human relations. Thirdly, outward communications—the presentation of a company to its external audience, in particular its customers and shareholders.

In my present position all three are of immediate interest. The business of my company is telecommunications; our only reason for existing is to assist our customers to communicate usefully with one another. It is also quite a large company, with its own communications requirements; we have over two million customers, 170,000 shareholders, and 37,000 employees.

*For additional personal note, see "Pages with the Editors."

What We Are Cut Out to Be

I WOULD like to dwell for a few moments on our primary business. This is a period of tremendous growth and change for the communications industry. The past ten years have brought us a vast expansion of business both in the number of our customers and the types of service we are able to provide. Let me describe what a customer, a business customer, today rightfully expects from us. Wherever he calls—on this continent or overseas—the connection should be rapid and the "hearability" of high quality. Our aim is that on any call we should

provide a close approximation to face-to-face conversation, free of noise and distortion. There was a time—within my own memory—when the success of a long-distance call could depend on the power of the human voice. I think we have virtually eliminated this kind of strain. There are enough causes of tension in business today without such an addition.

Associated with this concept of service is a flexible network of intercommunication. The latest office telephone enables a business customer to set up immediate conference calls with several associates or bring in other people to join him in a conversation. With a repertory dialer, he can just push buttons and let the equipment do the dialing for him—to as many as 800 different numbers. He may have his private long-distance lines to offices or plants in other cities. A telephone in his car will provide contact with any part of the continental network, and a pocket signaling device will let him know that a call is waiting should he be away from his desk. A mechanized secretary will keep a record of calls received during his absence.

THE control of modern business requires the rapid, flexible transmission of many types of information as well as the spoken word. Communication companies have long carried printed material —in telegram and teletype form. But in this age of mechanization and electronic processing it is essential that many different types of machines should be able to communicate direct with other machines. So we have developed systems for the ultrarapid transmission of coded data. Diagrams of all kinds can be transmitted by a process known as facsimile. Telemetering control information and instructions are carried for oil pipeline and electric power companies. Television images are transmitted for both network and closed circuit customers.

You might sum up our aim as the efficient delivery of information wherever it is required within the complex, industrialized society of North America. Or rather, this is part of a threefold aim, for we endeavor to provide the same level of service to people in their social lives and also to meet the manifold communications need of continental defense. To the utmost extent possible we organize the combined use of our facilities so that all these services are made available at the lowest cost to our customers—householders, businessmen, and government, or should I say the taxpayers. One way of achieving this is to use a single network, as we are doing, for the transmission of different kinds of communication—speech, printed information, coded data, and television images.

Planning and Research Keep Service Topflight

OUR ability to meet the surging demand for service of recent years has been the product of tremendous scientific and technical advances. And I trust you will bear with the overflowing of my enthusiasm while I mention briefly some of the more outstanding.

In providing the physical facilities for communications service there comes a point when it is no longer practical to go on adding more of the same type of equipment. You have to jump into something new, something with capacity you

can expand on a much bigger scale. Thus, as the forties advanced, we realized we could not handle much longer the growing demand for long-distance service merely by adding more wire and cable. We could also foresee a massive requirement for network television. In the states and here in Canada we therefore pursued the development of two large-capacity systems of long-distance transmission—coaxial cable and microwave radio relay. In this country geographical conditions made the latter especially attractive. And so across the continent vast new networks of speech highways have been built, and are still expanding—with the addition of new routes and more capacity.

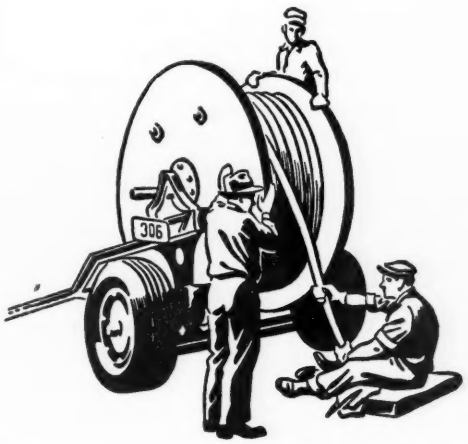
Our planning ahead must be related to two factors—likely demand and the best means of meeting it. For the latter, my own company receives invaluable assistance from the Bell Telephone Laboratories, thanks to our service contract with the American Telephone and Telegraph Company. Their wisdom is based on a careful balance between pure and applied research. It was the scientist's long work in the field of solid state physics that brought us the transistor and the many related devices which have revolutionized the techniques and potentialities of the industry.

Here is a practical example of the progress that is being achieved in the field of transmission. This little vacuum tube plays a vital rôle in our present radio relay system, amplifying up to 600 telephone conversations at one time. But we can already foresee the inadequacy of this system, and new equipment has been developed to increase tremendously the capacity of existing installations. It is built around this device, known as a traveling wave tube, which will amplify up to 1,800 conversations at one time.

Yet, seeking continuous improvement, we must look still further into the future. And here is a radically new transmission medium our scientists have produced, the long-distance wave guide, whose capabilities have already been proved in by field trial. A pair of these hollow copper-lined pipes can carry 200,000 telephone conversations, using radio waves of far higher frequency than have ever been employed for communications.

Overseas Communications

Comparable advances have been made in transmission overseas. Transatlantic telephone cables now provide service of far higher quality than was ever possible with radio links, subject to sun spot and atmospheric interference. They can even carry a modified or slow-scan form of television. But again capacity is limited. Maybe a transistorized cable system will



give us what we need, but we are also looking very carefully at the use of satellites to reflect or retransmit messages. And a research project is already under way into a satellite system that will enable us to beam from continent to continent telephone traffic as dense as now travels daily from metropolitan center to metropolitan center here at home.

The second part of our long-distance task is the routing of calls. Road building provides a good analogy to the overall long-distance picture. Radio relay and cable provide the throughways — with clover leafs built into them for access and exit. But we need traffic cops to route each call to its destination, having at their control sufficient alternate routes to avoid traffic jams during the rush hours. These are the new long-distance switching centers which operate the continent-wide direct dialing network that is now being established.

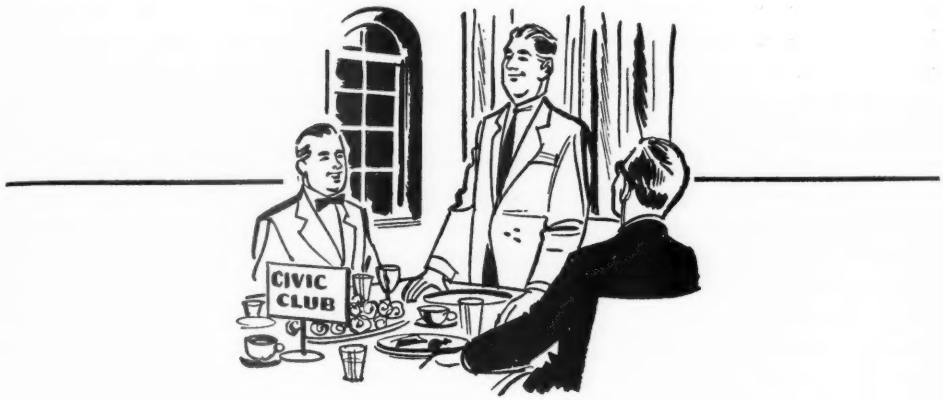
IN switching too—for both local and long-distance purposes—we can foresee the need for greater capacity and flexibility. For this we must surely turn to electronic switching, based on the tiny solid state devices that have followed from the transistor breakthrough. Today all telephone switching is electromechanical; there must be actual physical movement of switches to connect a call. In an electronic switching system immense numbers of calls will be routed almost instantaneously by the journeying of electric currents through thousands of fantastically sensitive yet solid components.

The first field trial in North America of an electronic switching system will take place this year at Morris, Illinois. This will be a limited system designed to show up the problems that arise when electronic switching is integrated into a conventional network rather than to test out specific devices. We are still several years away from the standardization of any particular type of installation, but the advantages of electronic switching can be predicted—notably the great variety of services it will offer. Under consideration, for example, is an arrangement that would enable you to instruct the equipment to call fifty numbers daily in rotation at a specific time—what a boon for salesmen—or, if you were going to be away from your office, it will route your calls to another number—even in another city. Quite likely, too, it will take over the functions of your private exchange, thus removing the need to keep switching equipment on customers' premises.

Two Future Telephone Services

I WOULD like to mention two other likely features of the telephone service of the future. One is the disappearance of the traditional telephone bell. With electronic switching it will be more efficient and economical to summon attention with a tone corresponding to a particular frequency. This can be transmitted as a part of the telephone call instead of by a separate source of power, such as bell ringing requires. Here is how the tone will sound. First the present bell and then the tone destined to replace it. I think you will agree it does a good job of attracting your attention.

My second development lies further in the future, and I can only indicate it. An instrument the customer can carry with him wherever he goes, his own personal, portable phone. Out on the lake



or the golf course, you will have immediate telephone service. I do not mind saying that for me, personally, the most important feature of such an instrument will be the cut-off switch, but I can see that it will have its uses. The miniaturization of components has brought this service very much closer. A transistorized radio transmitter might well form the basis of a pocket telephone. In talking over the transistorized transmitter words are picked up by an FM radio receiver. The transmitter, which has a range of several miles, is entirely contained in a very compact package.

Art of Communicating

THERE is, I think, a helpful comparison to be made between the technical problems of furnishing communications and the art of communicating—in the broader sense. The engineer has to provide for clear transmission and to ensure that each message reaches its proper destination. The executive has to ensure that what he says and writes is clear and understandable, that it really conveys what he wants it to. He is equally concerned that his audience receive his message as he delivered it, no distortion, no fading.

Of course, in the engineering job we are dealing in measurable, controllable quantities, whereas in the broader field we face entirely different problems in the latter. We must rely heavily on our intuition and the results are barely measurable—even when the information itself, dealing for example with financial or economic matters, is definite and precise. I would like to pursue this theme first in the area of internal information—talking to employees and listening to them.

OUR starting point is the need or justification for what is being communicated. There should be a good, defined reason behind each act of information. Avoiding the provision of information for its own sake alone, we should present a point of view. In other words, we have to know why we are telling a particular story—and telling it in the way we do. Otherwise we can produce so much chaff that our audience will lose the patience to look for the wheat. Thus, when informing employees about the company's

financial situation, we need to be clear both about what facts are relevant and what impression we wish to create.

A related problem is how to present our story. It is generally accepted that personal contact allied with open discussion is far more effective than an impersonal, written statement. Similarly, it is desirable to use accepted channels of authority and confidence. Thus in the telephone company we have come to realize that the foreman or first-line supervisor is the crucial link in the communications chain. If he grasps what we are saying and is eager to pass it on we will have an excellent chance of getting wide acceptance.

Well-written Printed Material a Must

Of course this does not mean there is no need for printed material. For one thing, there just is not time to hold meetings about every item of information our people should be aware of. Very often, too, printed material—say an article in the company magazine, a special bulletin, or leaflet — is necessary to reinforce verbal communication, to serve as a reminder or as a source of reference.

We have to speak—and write—to people in language they understand. You have probably had the experience of having a subordinate draft a letter for your signature which completely misses your viewpoint. It is a good letter but it approaches the subject from his interest, not yours; he has still to learn to put himself in your shoes. A similar mishap can easily occur when senior management has something to say to the employees, or even to lower echelons of management. The comprehensible point of view, the impact and relevancy of the facts may change considerably. Effective communication depends upon the right contents and approach—and these may well alter as you go down the line of authority. Plenty of attempts at communication fail or even arouse adverse reactions because the originator has not thought enough about who is supposed to receive them. On the other hand, failure can at times be due to talking down to an audience, to underestimating both its interest and intelligence.

Attitude of Audience Important

Behind any thinking about approach there is one fundamental consideration: Does the audience want to listen? Is there confidence in the source of information? Have previous communications created and sustained a desire to learn and accept? Does the attitude to management mean that what we say will be taken as an honest presentation, or will the audience begin to peer up our sleeves for the hidden joker? Of course it is no blind, unconcerned acceptance that we seek, but we do want the thinking, the questioning to be based on identification with the company. And this depends on the complete, long-term relationship.

Communications are certainly easiest when the employee has a direct, personal interest in the subject on hand. Yet among the topics we have to talk about are those where the personal interest, great though it is, will not be immediately apparent. For example, the company's financial record and requirements. We are, I am sure, agreed that all management and as many nonmanagement people as possible should have a sound

knowledge of a company's financial background, including the basic policies by which it operates. This is particularly desirable in the telephone company which, as a regulated utility, is exposed to continual public and political comment on such matters as its rates and earnings. And any employee is likely to be regarded as a spokesman for the company, expected to know all, or at least most of, the answers.

BUT in organizing any program of financial information we must keep the individual employee in perspective, be aware of his—or her—likely interests and relationships. Let us assume that the telephone company finds it necessary to apply to its regulatory authority for higher rates—this is only for purposes of illustration. The arguments behind the case are technical and complicated, even though the basic reasons for the application are simple enough. The bulk of the employees cannot be expected to understand these arguments, or even to want to understand them.

In our case, nearly two-thirds of our employees are women, especially young women, and they have plenty more inspiring subjects on their mind. Yet we can hope they will have sufficient interest and confidence to say something like, "Yes, our expenses are going up, and if we are to serve Canadians adequately and economically we have to earn the profits that will maintain the support of our shareholders." Or at least to declare that if the company says it needs more money, then it does. In other words, we should be able to obtain a positive attitude, a loyal and confident attitude, arising from voluntary identification with the company. But this will not be influenced very much by the specific arguments of the situation.

Others Will Want to Know More

ON the other hand, management people and experienced or interested nonmanagement will want to know a great deal more. They will have to be well-informed, prepared to deal with intelligent questioning regarding both facts and company policies. These people the executive must take into his confidence.

Let us turn to a less dramatic occasion. Take the issue of the annual report, an essential document for understanding how the company is progressing. I would like to say something later about shareholder interest in the annual report, considering here only its presentation to the employees, and taking my own company as an illustration.

Some 13,000 out of 37,000 employees are themselves shareholders, and so receive their own copies of the report, as do all members of management. There is some overlapping here, but it is less wasteful than the continual matching up of distribution lists. As soon as the report is

issued, a one-page bulletin based on the press release is sent to all employees. A few days later they get an illustrated, feature article in the company magazine designed to highlight the facts of greatest interest to them. But such material remains primarily a stimulus to discussion, and the various departments organize meetings on the report, culminating with presentations by first-line supervision to the people working with them. To aid them in this task they receive a special discussion guide.

In this way we hope to develop widespread knowledge of what the company is earning, what it needs to earn, and how better earnings can be achieved. But you have to prepare the seed bed for such knowledge, and that is largely a training function.

Management Training Course Molds Attitudes

THIS year we have held a week-long course on financial considerations for all our middle management people. Using both discussion periods and case histories, the course relates the technical problems of providing service to the financial structure of a telephone company, its capital requirements, and the effect of many, varied factors on its earnings. Naturally the purpose of such training goes deeper than the provision of information; 90 per cent of our training effort is devoted to the formation of an attitude which will manifest itself in thoughtful and efficient management.

Large corporations have a tendency to become separate communities. The loyalty that arises from this can be a great aid to efficient operation, yet there is a danger that the corporation set itself too much apart, even come to regard its existence as an end in itself. The way it informs the rest of the community about its operations is a pretty good test of its true orientation.

The same basic truths are surely valid here as in employee relations. There must be confidence—creating a favorable attitude, a will to listen. The sensational blitz on public opinion may—or may not—fulfill an immediate purpose, it will not generate long-run support, and most of us are in business for the long run.

THERE is a related quality of which both businesses and businessmen have, I believe, great need in their communications; sensitivity seems an appropriate word for it. I do not mean any quick-on-the-trigger touchiness but a keen awareness of the interests and changing opinions of those with whom they communicate. It is wise not only to speak but to listen to the effect of one's words. On the broader scale this means surveying opinion, registering changes, and seeking the reason, deciding what can be done—within the economic limitations of the business—to eliminate sources of criticism.

In the telephone company, for example, we take an annual survey of customer opinion relating to the quality of service, the value of service, and confidence in the company. With the aid of this survey and other more localized ones, we can identify areas of customer complaint, the extent of those areas, and the nature of the action or information which should help clear them up. This is an aspect of listening on which good communications — indeed, good public relations—depend.

It is important, too, to listen to the people who most influence public opinion, political and other local leaders. The establishment of good relations with what I might call the men of decision in a community seems to me of crucial importance to business. For the basis of good relations is not the broad treatment, the resounding speech or policy statement, but frank and friendly day-to-day contacts in the communities where we have plants or other representation, the communities which we can help to build or destroy. We have to be sensitive to the needs of those communities; we should also be prepared to discuss our business with their representative citizens openly and honestly.

What Is Our Corporate Image?

In the telephone company we have frequent reason to be aware of the importance of the public image we create. Because of the significance of the services we provide, we operate under continual public scrutiny—and we have found time and time again that greater customer knowledge of the company helps us to do a better service job. Similarly, in a period of expansion such as the present we have regular need of large sums of additional capital. We must therefore maintain the support of existing investors and facilitate widening of the ownership of the company. Our communications with the public, and especially with shareholders, should also serve this end.

Most firms today pay great attention to the literature they send their shareholders. There is even a certain rivalry in the production of annual reports comparable to the new model promotion of the automobile manufacturers. Different firms naturally find advantage in emphasizing different aspects of their business; for some an annual report may have a definite sales promotion function. In my own company, while we are aware of the public information purposes of the report, we acknowledge an overriding shareholder interest.

Yet there is no such person as an average shareholder to whom it can be addressed. There are those who will go deeply into the company situation, and

those who will wish only to peruse a summary of results. There are those whose concern is strictly, or largely, financial, and those who take a personal interest in what the company is doing, its achievements, and intentions. Our task is to meet all requirements, to give the analyst his statistics and charts, the more general reader a stimulating text and attractive pictures. At the same time, as a public utility, we would not feel justified in spending large sums of money on—shall I say—a Cadillac style of report. We prefer to remain in the "medium price" class.

I AM aware that I have perhaps tried to cover too broad an area in this talk, but it has seemed to me that there is a definite relationship between the various facets. As a telephone man, I am impressed by the immense potentialities of the new methods of communication our scientists and engineers have devised. As a businessman I can see how these methods are but means to an end, and that the enduring end we seek—a progressive, healthy society—depends greatly on the wisdom and moral content of what we communicate.

THE confrontation of individual with individual is still our best means of communicating. Everything else is but a substitute for this—however necessary in our present society and economy. Yet in many ways we are moving away from it. Notably where we have machines talking to machines. And they talk to each other on many subjects—they order stocks from each other, report inventories, present forecasts. These are essential business activities and the communications industry has made provisions for them. However, the present generation of machines can only provide facts; they cannot formulate opinions or make decisions for us. Here the human brain is still on its own.

"THESE two taxes [excise taxes on local telephone service, and on rail, plane, and bus passenger fares] are indefensible in the present time and circumstances. The travel tax came into being in World War II when transportation facilities were overloaded through troop movements and the government wished to discourage unnecessary civilian travel. Railroads, airlines, and bus companies now have plenty of capacity. The tax hinders the common carriers, the backbone of U. S. transportation, in their competition with contract carriers and the private automobile. . . . The telephone tax is equally unfair. . . . The episode certainly proves one point. There is no such thing as a temporary tax. Once you get into them, they stick like flypaper."

—EDITORIAL STATEMENT,
The (Portland) Oregonian.

The Future Rôle of Commercial Communications

By FRANCIS X. WELCH*

Hardly a day goes by, it seems, that we do not get news of new forms of communication service. Some of these are scientific, some are military, and some are, or some day will be, for sale to the public. Here is an attempt to visualize the probable rôle which the telephone industry, as such, will play in this increasingly complex and rapidly expanding field of future communications of all kinds.

COMMUNICATIONS—as a proper English word—is in danger of suffering the fate of other words which have been too often used, or abused. It has been stretched this way and that to cover so many different things that, like a tired rubber band, it does not mean anything very definite any more. In any event, the original meaning, which is simply a form or method of exchanging intelligence, has become rather vague. It could suffer a fate similar to "propaganda"—once a perfectly respectable word—which has likewise become worn out and distorted until now, to most people, it means something rather suspect if not actually reprehensible. "Image," another once useful and perfectly clear word, is also in danger of being so overworked that it may assume meanings unimagined a mere decade ago.

Now this is not an essay on modern semantics or changing terminology. Yet some basic agreement as to what communications means (or which of many meanings is intended) is necessary, at least as a point of departure, in any discussion about the future rôle of commercial communications. This naturally includes telephone, telegraph, and other forms of point-to-point exchange of messages or intelligence. Let us see how these changing times do affect our understanding of such a single, simple word.

To the U. S. Post Office, merely ten years ago, a "communication" was regarded in terms of a letter, of several classes, which the mail handles by millions a day. More recently the Post Office has been experimenting with "instantaneous" facsimile communications, whereby a letter posted in Washington, D. C., is photo-

*Editor, PUBLIC UTILITIES FORTNIGHTLY.

flashed to Los Angeles for delivery in a matter of minutes.

To the telephone man years ago, communications used to mean a two-way call —toll or local—transmitted by wire. Today such communications may go by radio relay, cable, leased wire, or microwave. To the telegraph company, which specializes in recorded as distinguished from oral communications, the methods have similarly increased with new developments in radio point-to-point transmission. The telegraph companies, like the Post Office, are also developing facsimile message transmission. And so, to each his own, the word "communications" assumes new and specialized meanings.

This is particularly true in the area of professional public relation techniques. Here the intelligence links, between a company and its customers, between management and employees, or between management and investors, are described in a special manner as "communications"—upon the validity, accuracy, and clarity of which the good will of a business might well depend. When the boss cannot get through to his employees, so that they are willing to listen, or believe what they hear; or when they, in turn, cannot talk back to him, fully and freely, so that he really understands how they feel; the modern "p. r." (public relations) expert speaks knowingly of an "inability to communicate" or a "breakdown of communications."

Carriers of Intelligence for Hire

WELL, we could go on and on, to the broader fields of broadcasting, both radio and television. Now we have telephone and other messages and pictures bouncing off the moon in point-to-point communications by the Navy between Maryland and Hawaii. We have Echo I, the artificial satellite orbiting the earth and being utilized for all forms of communications, broadcasting, TV, and point-to-point message and oral telephony. Even outer space has come within the purview of this word, with its constantly expanding meaning and dimensions.

In the public utility sense, *commercial* communications means, generally, transmission of intelligence for hire. It was for this reason that the Federal Communications Act of 1934 hit upon a rather clumsy definition of telephone, telegraph, and similar commercial communications facilities in the public service as "common carriers."

The fact that that same phrase, for more than three centuries, going back to the Common Law, has meant the carriage (for hire) of physical things (passengers or cargo) makes the Communications Act phrase somewhat confusing—ambiguous. It is necessary to explain the specialized meaning to anyone who does not understand it in its particular reference to telegraph, telephone, cable, radio, or other so-called "common carriers" of *intelligence* rather than of things or people.

So, to pull these random observations together on this, let us agree as to what "communications" means, solely as applied to modern commercial communications service. It is a pretty broad concept, even when it is so limited. First, let us agree, for this article at least, that "commercial communications" means a communication service for hire by the communicating parties—such as a telephone service—as distinguished from broadcasting, amateur, military, or other communications service

which is not held out to public use as a business operation.

Don G. Mitchell, president of General Telephone & Electronics Corporation, summed up the new and broader concept of communications pretty well in a talk early this year to the Executives' Club[1] in Chicago, when he said:

> Communications has taken on a new meaning in the electronic era. Today it means getting the right information, to the right person, at the right time—it means gathering information, processing it, and delivering it to the point where it is needed.

Does that sound rather general and nebulous? Mr. Mitchell went on to particularize—not as to that overburdened word communication, but as to the burden which it must bear—*information*. After all a communication which does not convey information of some kind is meaningless or defective. Communication is only the vehicle. It can assume many forms, similar to travel by train, plane, ship, or auto. But information is the passenger, or cargo, so to speak. It can and does ride in a variety of modern communication vehicles. If we keep this distinction in mind, we will not be lost so easily in our efforts to visualize the rôle of modern commercial communications.

And what is information? Ah, there is where the real variety show comes into view!

"Information," according to Mitchell, can mean the image of an approaching airplane or an air traffic control radar screen. It can travel via a television broadcast, a telephone call, a telegram, or it can take the form of millions of radio impulses comprising the calculations of an electronic computer. It can be the remote control of an atomic reactor. In short, if it transmits intelligence of any value to anyone, it is "information." If it is valuable enough to be sent via the hired facilities of any kind (by land, sea, air, space, point-to-point, mobile-to-mobile, or any combination thereof), it is a commercial communication.

What Kind of Facilities?

That is enough for definition. Let us next consider where the telephone industry, as such, is likely to fit into this broad concept of commercial communications of the future. The scope of its rôle will not, of course, be left to the discretion of the industry's own management. That much is obvious. Such decisions will ultimately be made at the regulatory or legislative policy levels—state, federal, and even international.

But to the extent that the telephone industry itself stakes out its preserves, and

[1] Hotel Sherman, February 5, 1960.

is able to justify its claims legally, economically, and technically, to that extent is the regulatory and legislative authority likely to be persuaded. *Legal* justification might involve such considerations as monopoly and antitrust factors. *Economic* justification might involve cost determinations, such as tax and load factors. *Technical* justification would involve the question of just how well the telephone industry will be able to "cut the mustard," so to speak, from the standpoint of research, development, and promotion of practical and useful service programs.

We have already seen, for example, how the Defense Department and commercial airlines have insisted on developing their own panoply of radio communications services for their own purposes. We have seen how independent manufacturers of microwave and business office communications equipment and other industrial users of radio frequencies have raised the monopoly issue in connection with offered or proposed telephone service programs in these competitive areas. We have seen how existing radio services have a head start on using their transmission facilities for certain newer forms of broadcast communications for individual uses such as paging. We have seen how the Post Office Department has grabbed the ball and run with it in the new field of letter-by-facsimile delivery service.

In the technical field and in advance research, such as the use of satellite relays and wave guides, the Bell organization seems to be well out in front of the parade. Along with Bell the independent telephone companies seem to be in a favorable position to realize collateral benefits, as the practical business aspects of these newer forms of commercial communication materialize.

Dividing the Communication Job

Obviously, the telephone industry, as such, will not be given the total responsibility for all forms of commercial communication or anything like it. It never has in the past been given such responsibility. The U. S. Post Office has handled the mails. The telegraph and cable companies handled written or "recorded" message service, moving by wire rather than mail. The primary field of the telephone business was generally regarded in the area of two-way voice communication from point-to-point.

But today these simple earlier distinctions have become hopelessly blurred, with the introduction of radio and electronic techniques. We have already noted the interest of the Post Office and Western Union in speedy letter-by-facsimile. For some years both Western Union and the Bell system have provided rival leased wire service for teletype, so widely used by the news press associations and others requiring leased wires.

Already, there have appeared on the market two rival forms of devices for sending written communications electronically via ordinary telephone instruments. It is clear that the telephone industry, as such, has no plans for direct manufacture, sale, or promotion of such telephone appliances. But it does stand to do a considerable volume of a new and specialized form of strictly telephone business, in the transmission of such written messages. The same is true of the handling of computer machine data, which can be sent electronically via conventional telephone circuits.

DOES it not seem apparent that the telephone business is dividing naturally, along the familiar lines of "service" as distinguished from "appliances"? The electric utility, and to a lesser extent the gas utility industry ran into this service *versus* appliance problem years ago. When the myriad of electric appliances, ranging from refrigerators, washing machines, driers, ironers, toasters, etc., began to shower down on the American scene in full volume as early as the twenties, the electric utility leaders saw a dilemma looming. Should they, themselves, go into the merchandising business, with all its distractions of sales and promotion, combined operations (revenues, expenses, and other bookkeeping headaches)? Or should they concentrate on service and leave the appliance business to the independent dealers at the risk of losing control of their own load building, and even the danger that the appliance distribution job would not be done or not done properly in the company's service area?

It was a ticklish question and some electric utility companies have not settled it entirely to this day. But the majority have shifted towards emphasis on service, supplemented in many instances by active cooperation with independent dealers. But we run the risk of fallacious reasoning if we depend too much on analogy. One obvious difference between the electric and gas utility industries on one hand and the telephone industry on the other is that of inherent characteristics of organization.

There were, in the twenties, thousands of gas and electric companies, and there are still hundreds of them—large but still localized and regionalized in the domination of their respective service areas.

THE telephone industry in the twenties was three-quarters Bell, and is today about 90 per cent Bell, based on the number of stations served. Does this circumstance suggest the advisability of concentration on service as distinguished from appliance merchandising? That seems to be the trend at any rate.

But there is still a broader division of responsibility looming in the commercial communication field, as the variety of specialized terminal facilities—or "appliances"—multiply.

It is often said of the natural gas industry that it resembles Caesar's ancient Gaul —all divided up into three parts: production, transmission, and distribution. These are fairly clear-cut physical distinctions which the industry, itself, worked out early in the organization years of the natural gas business. Production of gas, linked like Siamese twins with oil production in the great southwestern fields of discovery, had to follow its own pattern of operation.

Oil and gas inevitably went together to the money markets for funds to discover new reserves and bring them to the surface of the earth in salable form.

THE pipeline or transmission phase of the business emerged quite naturally as the next step, the central connection for bringing the gas from the producer to the consumer. And while there were and still are instances of very substantial combined production and pipeline operations, the industry itself strictly observes the overall distinction between producing gas and transporting it.

The distribution phase, whereby gas is delivered to the ultimate consumer, had already been in place for almost a century in our larger cities. Pipeline connection simply meant a shift from manufactured gas to natural gas supply. This natural tripartite division of the gas industry was later translated into law with the enactment of the Natural Gas Act of 1938, but probably not as clearly as some producers would desire.

Three Phases of Telephone Communication?

NOW, being on our guard against the mental trap of relying too much on analogy, is not it possible that a somewhat similar tripartite division of the telephone industry is in the cards for the future? Conventional telephone communication, of course, is a two-way proposition. It is not the delivery of a commodity, such as gas or electricity which is produced at one end and consumed at the other. There is no *production* of commercial communications in that sense.

But it may eventually develop that the trunk lines, the coaxial cables, the wave guides, and other information transmission facilities of the future will, in fact, turn out very much in the nature of pipelines of intelligence. As the volume of intelligence to be carried for hire increases by leaps and bounds, some such network of pipelines must be available for hire. They must be able to accept, indiscriminately, voice signals, computer data, written or facsimile impulses, and other millions of electronic "bits" to be carried from one place to be delivered to a point of distribution.

And the local telephone companies already situated as distribution systems must be able to decode, to realign, and dispatch each parcel of intelligence for delivery to its point of destination, at the right time, in the right form, and at the right place.

Already telephone scientists know how to break down channel and frequency utilization so that the gaps caused by mere pausing for breath on the part of a telephone conversationalist will be automatically filled in with other "bits" of intelligence waiting to be transmitted.

If one were bold enough to attempt any graphic description of the future of the telephone business, it is not out of line to predict that the day will come when the telephone (or telephones, for there will be a number of them) in the ordinary, well-equipped household may be called upon to perform a number of services which are otherwise managed today. We can foresee the possibility of not only voice connections, but all first-class written correspondence moving via telephone. We might also foresee the delivery of a daily newspaper, the reading of utility meters in the basement (while the family sleeps), and a rendition of various forms of entertainment, both visual and aural, all by means of the telephone.

With the advent of interconnection between mobile (automobile, plane, or other conveyance) and general telephone system operations, the per telephone station potentialities will multiply in a short time to astronomical proportions.

In the field of industrial communication services, we might foresee round-the-clock transmission of huge volumes of business information—inventories, plans, blueprints, and other statistics, whole book-sized volumes of newsprint, relayed in a matter of seconds. Educational techniques are standing in the wings awaiting the chance to move mass knowledge of the arts and sciences over closed circuit transmission facilities.

How much the telephone industry, as such, will be able to participate in all this as a carrier or pipeline operator, or as a mass distributor system, or a combination of both, depends on many things. It will inevitably inherit much of this business by very reason of being established—*in situ*, as the lawyers say.

It will probably have many opportunities to enter useful and helpful partnership with other forms of commercial communication services. A pipeline operator can deal with many producers and at arm's length. A distribution system can deliver many different things without discrimination, if it perfects its ability to accommodate a variety of "cargo."

The Language Barrier

It is easy to see that, in the rapidly shrinking world of communications, the telephone industry will soon be confronted with barriers, presently beyond its control. Political barriers are obvious. They are already in place. Long-distance traffic across the Iron Curtain has already run into this.

But even assuming, most optimistically, that international tension will someday be relieved and the Iron Curtain lowered if not eliminated, there is still the language barrier. What will it profit the telephone industry to work out a satellite relay system capable of transmitting a telephone call from New York to Peking for 50 cents, if there are only a handful of people on either end of the call able to communicate with each other, conversationally? Will the telephone industry's technical

progress outrun the world's cultural progress? It already has. What price a bargain call to 650 million Chinese who do not speak our language and vice versa? Unless something can be done about this, telephone technology could get so far ahead of the human element in the communications market as to be all dressed up and no place to go. It could stay that way many years.

This barrier is not unconquerable. But right now little is being done about it. If all high schools in the United States were put on a four-year compulsory bilingual basis, now, today (giving students a choice of four or five major foreign languages), it would be 1965 before an appreciable part of our population would have even a stumbling reading knowledge of a second language. If the colleges followed through by 1969 there might be as much as a 10 per cent reasonably fluent bilingual population.

THAT would just be here in the United States! There would obviously have to be co-operation on the other end to make for two-way communication. Well, such a program is not in sight, and not urged here seriously by this writer. It is merely suggested as a point of comparison to show how vast and how long-ranged the overall problem of communication in the modern world has become.

Meanwhile, however, there are plenty of other more practical problems at hand to occupy the attention of the telephone industry:

1. To stake out the industry's immediate and secondary responsibilities in connection with the production use and service over the increasing number of "appliances."

2. To stake out the industry's economic, legal, and regulatory boundaries in connection with the allocation of frequency channels, etc., including the creation and sharing of space facilities.

3. To stake out a firm and united organization for better understanding among partners in the communication field; Bell and independents, manufacturers, industrial users, etc.

All in all, the future is dazzling in its spectacular potentials. But the shoals and rip tides are equally impressive. It will take a firm hand on the tiller and many willing hands among the "crew" to bring the telephone industry's ship safely into the harbor of future success.

"MAN does not only think. He loves. He dreams. He sacrifices himself. He builds. He risks. He worships. All these things measure the dignity and special calling of a human being.

"The difficulty the intellectual may find in joining the human race is that he has unconsciously defined human dignity in exclusively intellectual terms, and so he finds little sense of fellowship with the simple and the dull and the unimaginative.

"This seems to me to be a religious quest. No heavier responsibility rests upon the intelllectual than that of involving himself in the modern search for ways of expressing the meaning and purpose of life."

—DR. JOHN M. KRUMM,
Chaplain, Columbia University.

Bell's Garden for Growing Managers

Out of today's 100,000 supervisory employees, the top commanders of a dynamic tomorrow must be reared. Bell has firm faith in more education for everybody. Even at the very top, managers are sent back to college for the humanities, as taught in the great books.

By JAMES H. COLLINS*

ALTHOUGH quiz shows may be mostly off the air, there is still one very much *in* the air, with tens of thousands of contestants trying to find right answers to its $64 billion question, and a vast interested audience. The question: *"What are you going to do for managers?"*

The contestants sit at executive desks in every kind of business, from the statistical "small" (under 500 employees) to the very largest—which is the Bell system. Millions of people with jobs are concerned, for the answers found are going to affect their employment, livelihood, families, and future.

This is not a new question. For in past times managers rose as apprentices, relatives, bright boys who married the boss' daughter. But these are new times, as will be realized in trying to imagine any bright boy marrying into a Bell presidency.

WHETHER it is true or not, that we always prepare to fight the last war, we generally expect to return to the last peace, and that was the case in 1945. During the depression people could not afford things, and in the war years could not get them. The consumers lived in an economic poorhouse of which memories are dimming, the days when a load of lumber going through the streets was as rare as a herd of elephants, the doubling up, the rationing of food and gas, the frantic search for cigarettes, the bootlegging.

Youngsters are skeptical: "You mean to say this country was ever like that?"

It was predicted that the country would go back into the poorhouse. There would, of course, be some adjustments, as war jobs ended, but no startling changes from the old order.

Instead, business found itself cast in the rôle of Bumble, the beadle, in *"Oliver Twist,"* with not one new boy timidly asking for more, but all the boys rising

*Professional writer, resident in Washington, D. C. For additional note, see "Pages with the Editors."

en masse, demanding more, and bigger, and newer, and better—and with the money to pay for it. The astonished Mr. Bumble had kept them quiet by promising new wonders to come with peace—television, push-button appliances, cars, travel.

"All right," clamored the boys, "Where are these things?"

What happened to the Bell system is illustrative of business generally. In the first decade, Bell factors doubled and tripled—number of phones, daily calls, employees, stockholders, plant investment—everything but rates and profit margins.

"MORE!" became the operative word in every industry, trade, and service, bringing mergers, reorganizations, expansions, displacing people, and at the same time creating new opportunities, pulling our communities apart, stirring up have-nots all over the world.

We ourselves are in two minds about it. We are not all happy. There is complaint. There are efforts to reverse the trends, bring shoppers back downtown, put Humpty Dumpty back on the wall. But majority opinion approves it as progress. For the evils of "More!" we, are told that we must produce more, buy and sell more, consume more. . . . If there is a virus, more may be the antibiotic.

Facing a Dynamic Future

WHEREVER this new way of life is taking us, one other operative word stands out: management! When population and other curves are projected into the immediate future, we realize that we have seen nothing yet. Everything is going to be doubled. Better brains, better education, better management is going to be needed for more people, more housing, more schooling, more jobs. The complexities become frightening.

While Bell management was still struggling to reduce backlogs of waiting subscribers, its own curves were projected, and another operative word found: *Change!*

> What is demanded of managers in this dynamic world is the imaginative anticipation of change that permits setting objectives, developing plans, and constructing action programs that resolve problems, throw up defenses against adverse forces, and exploit opportunities as they present themselves.
>
> It is difficult enough when the field of action is confined to economic dynamics. The challenge is even greater when changes are visualized in the social and political environment in which business functions.
>
> Developing executives to meet this challenge is a principal concern of top management. Out of the complex interaction of inherent ability, educational background, technical skill and training, job experience, the formative influence of supervisors and associates, and formal advanced management educational programs, executives build their capabilities to handle current assignments, and to direct their thinking and planning into a dynamic future.[1]

How fast telephony is speeding into this dynamic future was pictured recently by a Bell executive, in explaining

[1] "Developing Managers for a Dynamic Future," by Melvin Anshen, Graduate School of Industrial Administration, Carnegie Institute of Technology, in *Bell Telephone Magazine,* winter 1958-59.

the possibilities of world-wide communications with the moon built into telephone circuits. Within five years, he assured telephone people, they would be working with facilities even more fantastic, still to be developed by scientists still unknown, the nature of which cannot now be foreseen.

Back to the Humanities!

For a start in alerting its top managers to this looming future, American Telephone and Telegraph set up a series of conferences, designed to "extend the business-oriented thinking of a complete horizontal slice of management at the department head level." For these conferences a few dozen top executives were chosen from Bell operating companies in this country and Canada, and from Western Electric and Bell Laboratories; outside specialists and advisers were called in as needed.

These conferences brought together managers who had dealt with similar problems in different localities. The results were so satisfactory to them and AT&T that a synthetic telephone company was set up to be run by the same kind of "brass." Besides dealing with its day-to-day problems, this bits-and-pieces management was expected to look to its future. What kind of business climate would it have to face in 1965 or 1970, as economic, social, and political conditions changed?

Participants in these management experiments came to the conclusion that they needed more knowledge of the new influences affecting their business. That they needed more education of a nontechnical kind. That physics, mathematics, chemistry, electronics ought to be supplemented with the "humanities." As symbolized in the great books that were required reading in high school and colloge, which were generally skimmed, skipped, or forgotten.

There is a guilt complex among technical men about the great books, and among technical educators, and indeed the general public. The world we live in today is definitely a creation of technical people, and technical education, but a suspicion persists that the humanities have been left out of it, and that maybe that is what is the matter with it.

So, in "tech" the engineering student who waits until the small morning hours to get a crack at the institute's computer, also works on an assigned theme, "What was the effect of the reformation on the Catholic Church?"

This is a very old field of controversy. Once Latin, Greek, and "polite learning" were considered indispensable to the education of a gentleman. These were dropped, one by one, when students went to college to learn jobs.

What have the historians, philosophers,

the scholars, been saying all these years? To a nonacademic individual who escaped required reading, and read the great books that he liked, and avoided the prosy ones, there is something amusing in this itch to get back to them.

Beginning with Homer, the great books are a miscellaneous lot, written in different ages, and lands, and mostly before learning was subject to experiment and proof. The scholars have interpreted them in different ways, each generation, arranged them for teaching, fought over their interpretations and systems, and often voiced their own doubts as to whether they teach anything.

A little acquaintance with slide-rule men shows that many of them are quite at home in their professions, and do not see what the classic humanities can teach them to help in running a telephone plant.

Around 200 B.C. there was a slide-rule fellow who expressed it for them. He measured the circumference of the earth within 50 miles, and was later found correct. Scholars were then speculating about the 20-year route that Ulysses took getting home from Troy. "When you find the shoemaker who sewed up the bag of the winds," said Eratosthenes, "you will find the route."

Bell OK's Thoreau

NEVERTHELESS, top Bell people decided that polite learning might be useful to executives facing the dynamic future. There was a feeling that telephony had become too technical, that people were figuring in it more and more. So some liberal arts courses were commissioned in various colleges, and higher-up executives sent to take them, on company time.

First, was a ten months' course at the University of Pennsylvania, followed by shorter ones at other colleges; the studies planned by faculties, in accordance with what professors thought technical men might use. Three shorter courses were shaped to give orderly teaching in "Religion, Science, and Man," "The Individual in Society and Literature," and "The Individual and the State."

RECENTLY, the ten months' course at the University of Pensylvania was discontinued, for various reasons, not reflecting on its value to the students who had taken it. A class of at least twenty-four students was necessary to the college, for financial reasons. And to supplement nine or ten Bell students, efforts were made to interest other companies. Besides students' salaries, the course costs $4,000, and other companies decided that, for their types of executives, more value lay in business administration courses and law. Many top managers outside telephone companies have legal backgrounds.

One of the tenets in Thoreau's philosophy was keeping a flexible attitude toward life, keeping the forefront shadowy. The Bell attitude toward the humanities is something like that. No definite results can be scored from top executives' ten months in college; there have been 130 of them. But there is confidence that results will materialize in the future. Other college courses in the liberal arts, ranging from two to six weeks, are being given departmental managers.

Incidentally, Thoreau's attitude toward paying taxes had nothing shadowy about it—he was willing to go to jail in protest; he should see what taxes have become today!

BELL'S GARDEN FOR GROWING MANAGERS

From the Bottom Rungs

In contrast to the handful of managers who have reached top commands, by abilities as diversified as themselves, the Bell system has more than a hundred thousand employees in supervisory positions. From these, beginning with foremen, it develops managers all the way up to vice presidents and presidents.

Bell has always looked inside for its managers. In the very beginnings of telephony it was necessary to hire teachable young people and train them in jobs that could not be filled by hiring the carpenters and compositors in the trade world of that day. There were no electricians coming out of college. Along with the typewriter, that was materializing at about the same time, Bell opened up the first real field of employment for women.

From the beginning Bell training programs have been adapted to the growth of telephony, and it has been a firm article of faith that general education helps employees develop supervisory and managerial skills.

So, the humanities have not been forgotten, and they are embodied in the programs from the bottom up—not as history or literature, but in a half-dozen flexible courses, taking from three to six days.

One of these given foremen, division managers—everybody up to the very top—is titled "How to Run a Conference." It goes into the very fundamentals of management.

The word "conference" raises a picture of a long, polished board table, with solid chairs for a dozen vice presidents—or as sometimes phrased, "stuffed shirts." It is a word of exasperation: "He is in a conference, and cannot be disturbed."

Call it "huddle," and understand it as a working tool of management, and it comes closer to the real thing. Among a hundred young hirees taken on this morning, there should be one who, about 1975, will have risen to a manager's job, divisional or departmental. About 1990 he may be a company president, with a dozen years of high executive skill ahead of him.

This valuable individual will have worked with thousands of fellow employees, in literally tens of thousands of huddles, not by winning friends or influencing people, but by mixing with them, learning what they may have to help him in his job, calling them into meetings, submitting problems on which they may throw light.

A conference turns up individuals who are vague, verbose, suspicious, hostile, who have to be kept on the ball, and to a time schedule. Besides contributing to the solving of problems for the fellow who calls them together, they are of the greatest value in his own development as a potential manager.

What business needs is more good conference-running stories, like that of the account executive, submitting a new advertising campaign to a group of department managers, called together by the old man. It is the Madison avenue fellow who must take charge of this conference, in self-defense. The old man has brought in department managers who have no knowledge of advertising.

"I can't say I like that girl," objects a production man. "For our kind of products I thing she should be a blond."

The account man smiles at him, appreciatively. "Ah, I see you understand art!" he says. Which gives him a rating with the boss, which is all he wants, and why he put in his nickel's worth.

ANOTHER technique in running a conference is that of a banker who has been appointed to several national meetings, where very important persons, often international, come together as strangers. Each is jealously guarding his own importance. Not entirely unimportant himself in his own bailiwick, the banker quietly circulates, sounding opinions. Obviously he has no ax to grind, is studiedly unimportant.

"This fellow Robinson seems to be an understanding person—who is he, anyway?" say the VIP's. And he is made chairman.

Some of the art of the lion tamer is useful in working with huddles—especially his attentive study of each animal as an individual.

Hannibal, the Tireless Listener

OTHER courses in this postwar category deal with the evaluation and coaching of people, the planning and control of jobs, the working around barriers, and with that new field so solemnly called "communications," which yesterday was known as the grapevine, scuttlebutt, and shop talk. It is of the highest importance to anybody cultivating management skill. For it tells what is cooking.

It was out of a course on talking to people that there arose, spontaneously, a new one on "The Importance of Listening to People." This is given to everybody from foremen to division brass. It was discovered that people were not always listening when talked to, that much of what was said, and important to them, was going in one ear and out the same ear. So, the course on listening was interlarded with brief "exams." The listener is required at intervals to write a summary of what he has heard and understood. This is a course of definite value to aspiring managers, for subordinates often have information worth listening to, and investigating.

History should have something to say

about good listening as a way to get on. For great rulers and commanders have generally turned listening to good account.

Currently, there is Hannibal, in Harold Lamb's recent biography. Hannibal crossed the Alps with elephants—his route still in dispute, like that of Ulysses—and for eighteen years fought Rome inside Rome. Roman sea power cut him off from Carthage, so he recruited barbarians, Gauls and Celts, who were enemies of Rome. Chiefs of these peoples came to talk to Hannibal, heavy with gold ornaments, dressed to show their importance, and full of oration about themselves, their deeds, their wrongs. Hannibal not only listened for weeks, but observed protocol, treating each chief according to his standing. Their boastings did not bother him at all. When they had said their say, how invincible they were, he led them out to battle, to prove it.[2]

The Changing Color of Shirts

TODAY, blue shirts changing to white, foreshadow a new era in which business will need more and more supervisory and professional people, and young folks will find new opportunities.

There is already a slight drop in factory employment, and automation is expected to intensify the trend. Labor leaders report that recruiting is more difficult for this reason. Mechanization of industry displaces manual workers, but creates more supervisory jobs. Machinery needs maintenance, and better education. So labor leaders are turning to white-collar employees for members. They find that blue-collar objectives like wage increases and other gains are not as potent with white-collar workers, the supervisors and technicians who are stepping into the work forces of today. They are often on salaries that do not compare with wages, have technical education, professional status. They do not regard themselves as "labor." This is one of the most significant lines of cleavage running across our social life and economy.

At Pearl Harbor blue-shirt workers, in manual jobs, on the assembly lines, made up about 40 per cent of the people in basic industries. There were about 31 per cent white-collar workers in supervision, accounting. The remainder of gainfully employed workers were on the farms, in transportation, mining, and like occupations.

In twenty years, white-shirt jobs have increased, but blue-shirt jobs decreased. Estimates for 1965 are that blue-shirt workers will have dropped down to about 38 per cent, while white-collar people will make up better than 42 per cent.

SOME representative figures for this cleavage are given for one of the major labor organizations, the auto workers' union. At the height of the organiza-

[2] *"Hannibal,"* by Harold Lamb, Doubleday, and in paper bound.

tion boom, it had around 1.5 million members, predominantly blue-collar workers. The trend toward office and supervisory work had not yet become noticeable. But mechanization and other changes have reduced this membership to an estimated million, and organizers are looking to the white-collar people for members. It is estimated that there are 500,000 of these employees, of whom about 100,000 have been organized.

This is the looming problem in our industry. As blue-collar skills are taken over by automatic machinery, people are displaced, but new jobs created for others. Machinery has to be maintained, kept running, as well as designed and built. It is often pointed out that automation creates more interesting and better-paid jobs. But blue-collar workers cannot be retrained for, or adjust to, such jobs, and so are replaced by young people, with better education.

It is a trend of great significance to management, seeking to develop supervisors and managers, and of great significance to young people entering working lives.

Rags to Riches in Telephony

AUTOMATION has been going on in the Bell system ever since the introduction of local dialing, two generations ago, and today proceeds at a furious pace. Yet in all these years there has never been any displacement of people, because the adjustments have been made by growth. Without local dialing, mile-long switchboards would have been needed, and millions of operators. They have never been hired. Automation has been taken care of on the hiring line. New people have been taught particular jobs, and adaptability.

There has never been any blue-shirt-white-shirt cleavage in telephone jobs. A telephone fellow is both, and his job has a security rooted in the nature of the business.

Bell employee magazines publish page after page of pictures, employees being promoted, being awarded pins for length of service, being retired, a continuous story of people on the rise. It might contribute toward their development in managerial ability to supplement these pages with some details of how they are getting along.

Telephony is really rife with rags-to-riches stories, like the classic case of Walter S. Gifford, coming out of college, educated for electrical engineering, deciding that General Electric would be a good company to work for, but sending his letter to Western Electric instead. A good company, too, but different, that gave him a beginner's job from which he rose to be president of AT&T.

What did Gifford study to broaden out an engineering education? What help did he get from people he worked with, and what help give them? How did he get to where he got with what he had to begin with? Not all Bell employees aim for presidencies, but they do reach jobs as important to the company, and to themselves. How is it being done?

COMMENTING on the new college courses in the great books, Frederick R. Kappel is quoted as saying that there was nothing of the kind when he was coming up, but that he managed to keep one jump ahead. How he did it at various stages in his career might be very stimu-

lating to others with managerial potentialities.

The Humanities in Collision

BELL went into the humanities from another angle, before the great books were consulted, or college courses commissioned.

It was in the nature of a head-on collision—color phones, and the humanities of today, as found in people all around.

Up to that time, telephone companies and their subscribers were not exactly strangers—that would be oversimplification—but not very well-acquainted with each other.

The subscriber knew the telephone company as a corporation from which he rented a black instrument, with switchboard connections. In the majority of cases, one black phone in the living room. Often shared with a dozen other subscribers on a party line. A nervous woman could order an extension in the bedroom, to feel safer. She might have to conceive the idea herself—there was no such promotion as started with color.

This standardized unit of service was what the regulatory commissions dealt with. It was what the public visualized when rates were agitated. It was what subscribers had not been able to get during the war years, and what they now clamored for in backlogs.

To the telephone company the subscriber was a static individual. Install his black set, and he was satisfied, and as long as he paid his bills all was well. That he might be building a house, or providing for the future, be buying cars, furniture, travel, that he might buy something more from the telephone company, if held up to his view . . . to say that telephone service was not promoted before color would not be correct . . . but definitely telephone companies had no concept of subscribers as people with ants in the pants.

WHAT happened when color was sprung was that shift from statistical picture to the social values that are changing it, and for which managerial abilities must be cultivated?

The backlogs were quantitative, so many millions of individuals wanting phones. Color made it qualitative—any individual in a backlog could have dreams.

Color woke the subscriber to the fact that he could buy something more from the telephone company. He could have any color except black for a premium.

And the telephone company discovered that the subscriber would buy premium service, for his business as well as his home, and the idea has been actively developed ever since.

For the dynamic future, and the managerial ability to meet it, color has added salesmanship and merchandising to the opportunities and growth that seem to have no foreseeable limits.

There is nothing like this in the classic humanities. Neither history nor literature anticipated America and its postwar way of life.

Plato and Socrates debated the abstract virtues, in that crossword puzzle place, the agora, which was away from home. They never hit upon such a theme as fixing up the house, selling the husband appliances to lighten the housewife's drudgery.

Home to the Greeks was a place in which to shut up the housewife.

It would be 20-odd centuries before utility companies came along and fixed her up with one hundred per cent gas, electricity, telephone extensions everywhere at hand.

Those were the humanities then. Maybe nice to know, but not in the spirit of today, which is "more!"

Where Was the Telephone Invented?

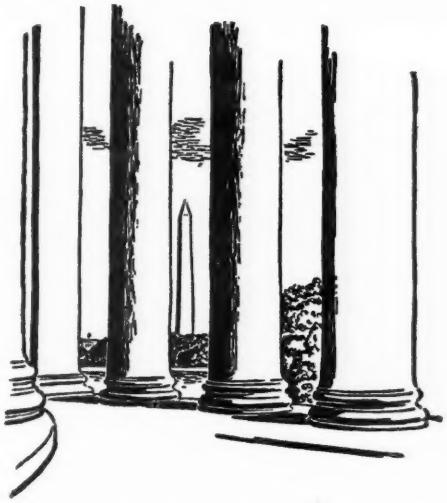
"FIXED in the public mind is the belief that the telephone was invented by Alexander Graham Bell in Boston. It was there on March 10, 1876, that Bell spilled some battery solution on his trousers and shouted over a primitive transmitter to his assistant in another room: 'Mr. Watson, come here; I want you.' That is credited with having been the first complete intelligible sentence transmitted over a telephone.

"Little known to the public is that during the years 1874-76 Bell spent his summers at the home of his father in Brantford, Ontario, conducting a series of tests on ear membranes that made his later discoveries possible. On July 26, 1874, Bell himself says, he formed clearly in his mind the theory of the telephone that ultimately proved to be correct. Interviewed in 1906 by a young reporter for the Brantford **Expositor,** Bell declared: 'I invented the telephone in Brantford in the year 1874.'

"Thomas Costain, novelist, has just written a book stressing Brantford's important part in the experiments and its claims to having been the birthplace of the telephone. He, it seems, was the reporter who interviewed Bell in 1906. The people of the little community hope that the book will serve to enlighten the public. It is a slender hope. Once a notion is firmly embedded in the public mind, such as the invention of the telephone in Boston, eradication becomes almost impossible."

—EDITORIAL STATEMENT,
The (Baltimore) Sun.

Washington and the Utilities



FPC Plumps for Area Pricing

By a bare majority, but no dissent whatever, the Federal Power Commission came up with a long-awaited policy decision on whether to cling to traditional cost base rate making for natural gas producers or try a more expeditious method—area pricing. The bare majority of three was only an accident, because of a vacancy on the commission and the fact that Commissioner Sweeney had received his recess appointment only last July 15th and was not able to participate.

Another paradox in the very important policy decision espousing area prices was the fact that even while adopting area pricing as a more practical method of fixing rates for producers, the commission nevertheless decided to use a cost base for the very case which it decided simultaneously with the policy announcement. This was the controversial Phillips Petroleum decision which has been kicking around twelve years and which in 1954 was the basis of the U. S. Supreme Court decision requiring independent producer rates to be regulated under the Natural Gas Act.

It was understandable, however, that the commission should adopt a cost base approach for the Phillips case for the simple reason that the evidence had been presented on that basis. The commission added, however, that "ridiculous" results would be reached in a great number of cases if costs should be the only basis for regulation. The commission declared that the ultimate solution to independent producer rate regulation lies in the determination of fair prices for the gas, based on reasonable financial requirements of the industry, and not on the rate base and expenses of each company.

Using the rate base approach for Phillips, the FPC said the company's revenues fell about $10 million short of its $55.5 million cost of service for the 1954 test year. The commission concluded, therefore, that the entire proceeding should be terminated, except for two points. The case involves a general investigation of Phillips' rates and 12 proposed rate increases, totaling about $5.7 million per year. Phillips has been collecting the increases subject to refund for varying periods, and these rates will be permitted to continue in effect, although two of the 12 cases were left open for possible adjustment.

Phillips claimed a $92.3 million cost of

service during the proceedings, but last April filed a settlement proposal reducing this amount to $70.8 million. The FPC rejected the settlement offer, pointing out that a number of parties had rejected it and that it did not represent a new solution, but rather the acceptance of Phillips' present and past contract prices—many of which are the subject of other proceedings.

In its 56-page opinion, the commission declared that use of the rate base approach would in all probability result in higher consumer prices, as shown by Phillips and other cases. The commission said the ultimate objective of its area price plan is to set prices adequate to maintain the gas supplies needed by the nation's consumers, but at prices no higher than necessary to accomplish that purpose.

To this end, the commission simultaneously issued a policy statement setting rate guidance levels for the nation's various producing areas. Two prices were established for each area—one applicable to new sales, and the other to existing contracts. The FPC said it would not authorize new sales at rates higher than these established levels without price justification. Further, any proposed rate increases above these levels will be suspended, the commission said.

In arriving at these price levels, the FPC said it had considered all relevant facts, including cost information, existing and historical price structures, production volumes and trends, price trends over a number of years, exploration and development trends, trends in demands, and available markets.

The Phillips Case

The Phillips case originated October 28, 1948, when the FPC began an investigation of the company's rates. On August 16, 1951, the FPC held that it did not have jurisdiction over Phillips, but this ruling was reversed May 22, 1953, by the District of Columbia U. S. court of appeals. The lower court's decision was affirmed by the Supreme Court on June 7, 1954. The commission then reinstituted the Phillips investigation, and subsequently consolidated with it the 12 rate increase cases. Hearings started June 26, 1956, and closed December 18, 1957, after eighty-two hearing days. FPC Presiding Examiner Joseph Zwerdling filed a decision April 6, 1959, which also concluded that Phillips' revenues were substantially below its cost of service. Exceptions were filed to that decision, and the FPC heard oral argument October 1 and 2, 1959.

Although the commission adopted parts of the examiner's decision, it disagreed with his findings in several fundamental respects, including his conclusions that a system-wide rate approach and the rate base method of regulation should be used. The commission, rejecting the system-wide rate approach, pointed out that Phillips' operations are conducted in widely separated areas and that it produces gas of varying qualities and serves diversified customers under different conditions. On the rate base approach, the commission said it was convinced that this method would produce "fallacious results." The traditional methods for regulating utilities provide only some possible aid toward solving the problem of fixing producers' rates, but not the answer, the FPC asserted.

The commission dealt at length with the problem of applying utility ratemaking principles to gas producers. It pointed to the "extremely difficult" problem of allocating costs between the regulated and unregulated products, which often brings an "unrealistic result." It also stressed the problem of using the cost approach in unitized fields where many

single wells have as many as 50 part owners. With each owner recovering his own costs, the FPC said, gas from one well might range in price from one cent to $10 per thousand cubic feet.

The commission also emphasized the administrative impossibility of having a full cost rate base for each of the thousands of producers under its jurisdiction. The FPC said that allowing for expected future filings, and even if the present staff were tripled, it would take until the year 2043 to reach a current status on producer rate work, using present techniques.

The FPC indicated it expected its producer rate regulation plan to be contested on the ground that it is not lawful under a 1956 ruling by a U. S. court of appeals in the city of Detroit case. The FPC in that case permitted Panhandle Eastern Pipe Line Company to use a commodity value in pricing gas which it produced itself. The court, however, remanded the case, stating that the higher rates represented an increase above that which would result from the conventional rate base method, which must be used "at least as a point of departure."

THE commission in its opinion last month said that some parties would contend the court ruling requires it to calculate a rate base and determine a rate of return, at least as a point of departure. "If this contention is correct," the commission declared, "then, as a practical matter, adequate regulation of producers appears to be impossible under existing law." In this connection, the FPC said that the Natural Gas Act does not contain "as much as one word which indicates that this commission must use a rate base in determining just and reasonable rates." The FPC cited court precedents for working out regulatory principles based on other standards and criteria, but said it realized any decision might be appealed.

Railroads Do Not Use Federal Credit

THE $500 million program of loan guaranties to help the nation's railroads, the closest the federal government yet has come to subsidizing the railroads, is not turning out well. The railroads are not using it. The federal effort is underscoring the railroads' financial plight and, according to the Association of American Railroad Economists, threatens to shove the industry's rate of return on investment this year to 2.25 per cent, the lowest since depression year 1938. The loan guaranty program, a mainstay of the Federal Transportation Act of 1958, was designed to help the limping railroads raise funds to improve their systems.

But the railroads are finding that even with government guaranty, private credit is not plentiful. As a result, only a handful of railroads have made use of the federal program. This week, the Interstate Commerce Commission disposed of a small stock of loan applications by approving a federal guaranty for a $3 million loan for the Chicago & Eastern Illinois Railroad. With no loan application pending, the ICC has guaranteed only $66.5 million of loans since the program began August 12, 1958.

Congress authorized guaranties of up to $500 million under the program, which does not expire until the end of March, 1961. Under the program, railroads borrow money from banks and other private lenders, with the government guaranteeing repayment. The idea was that the guaranty would enable hard-pressed railroads to borrow money more easily and at cheaper interest rates.

Thousand-mile Hot Lines?

A RESEARCH team of the electric industry has reported progress in its studies to solve the problems associated

with transmitting electrical energy over distances up to 1,000 miles. E. Robert de Luccia, vice president and chief engineer of Pacific Power & Light Company, and Joseph K. Dillard, manager of the electric utility engineering department of Westinghouse Electric Corporation, have found that long-distance transmission problems can be solved. They studied voltages up to 690,000 volts on lines capable of carrying more than 3 million kilowatts of electric power, which is much more than the highest voltage now operating in the United States.

With the aid of digital and analog computers the research team was able to determine the effectiveness of corrective devices needed to stabilize the ultrahigh voltages over the full length of the circuits studied. Following the determination of the feasibility of such lines, Dillard said, it will remain for the electric utility industry to compare the economics of extra long-distance transmission with the alternate of transporting fuel to power plants at the load centers.

Air-line Rulings

A U. S. district court in Nevada dismissed an action filed by Bonanza Air Lines for an injunction restraining the Nevada Public Service Commission from enforcing an order requiring the airline to restore service to two Nevada cities. In 1946, Bonanza was awarded a certificate of public convenience and necessity by the Nevada commission to serve Reno and Las Vegas, Nevada, and in 1947 the intermediate points of Hawthorne and Tonopah, Nevada. In August, 1959, Bonanza notified the Nevada commission by letter that it intended to discontinue service to Hawthorne and to curtail service to Tonopah. Bonanza took the position that it was subject to the exclusive jurisdiction of the Civil Aeronautics Board, and was therefore not required to submit to the jurisdiction of the Nevada commission. The district court stated:

> In the present case, there are a number of alternative constructions which a state court might place upon the Nevada Act, particularly in view of the policy that courts, whenever possible, will construe statutes so as to avoid conflict with the federal Constitution.

THE Hawaii commission has dismissed a petition of Island Airlines, Inc., which proposed to operate a public utility business as a carrier of passengers by air in the state of Hawaii, and requested the commission to approve its proposed passenger tariff for its operations. The CAB participated in the proceeding and submitted two questions: (1) whether the channel waters lying between the islands of the state of Hawaii were within the boundaries of the state of Hawaii; and (2) whether §15 of the Hawaii Admission Act resulted in retaining CAB jurisdiction over proposed operation.

The commission made no determination of the first issue because of the incompleteness of the record. As to the second issue, §15 of the Statehood Act provided in part that "a territorial law enacted by the Congress shall be terminated two years after the date of admission of the state of Hawaii into the Union . . ."

The legislative history showed that the Federal Aviation Act was intended to be continued in effect in Hawaii as a "territorial law." Accordingly, the commission concluded that jurisdiction over the proposed air transportation was still retained by the CAB.

Financial News and Comment

By OWEN ELY

"Fortune" Criticism of AT&T Fiscal Policy Considered And Appraised

THE September issue of *Fortune* contained an 11-page feature article entitled "Is AT&T Playing It Too Safe?" The question at issue is the long-standing policy of AT&T to maintain its capital structure at about one-third debt and two-thirds equity interest, during periods of prosperity. A few state commissions in their rate decisions have also questioned the necessity of maintaining such a low debt ratio, and a professional utility "expert witness" has sought to prove that if more debt was sold with resulting tax savings, consumers could benefit through lower rates.

The *Fortune* story appears to us to have been somewhat slanted in its approach. The roots of AT&T's conservative fiscal policy date back not merely to the depression of 1929-35—when its $9 dividend was maintained without change although dividends on leading electric utility stocks were reduced over half, on the average—but to the period following World War I. It is perhaps not generally realized that, due to the government's taking over telephone operations during the War, the Bell system emerged in weakened financial position. Its debt ratio was nearly 50 per cent and new funds cost system companies as high as 8 per cent. AT&T stock sold below the par value of $100 a share during the years 1920-21 and new stock could not be sold under these conditions. Hence a vigorous campaign was then initiated to obtain rate increases, overhaul the system financial structure, improve its credit standing, and strengthen the investment appeal of AT&T stock.

HISTORICALLY the dividend has not been reduced during the present century. It remained at $7.50 during 1900-05, at $8 during 1906-20, and in 1921 was raised to $9, which remained unchanged until 1958 when in effect it was raised to $9.90 and the stock split 3 for 1. Moreover, valuable rights to subscribe to convertible debentures and common stock—12 of the former offerings and 8 of the latter during the period 1916-58—supplemented the dividend.

During much of the 1920's high-grade

DEPARTMENT INDEX

	Page
Fortune Criticism of AT&T Fiscal Policy Considered and Appraised ..	641
Chart—Bell System Growth 1895-1960	643
Calendar of Proposed Utility Offerings October 1st to March 31st	645
Nuclear Power-generating Costs	646
Table—Financial Data on Electric Utility Stocks 647, 648,	649

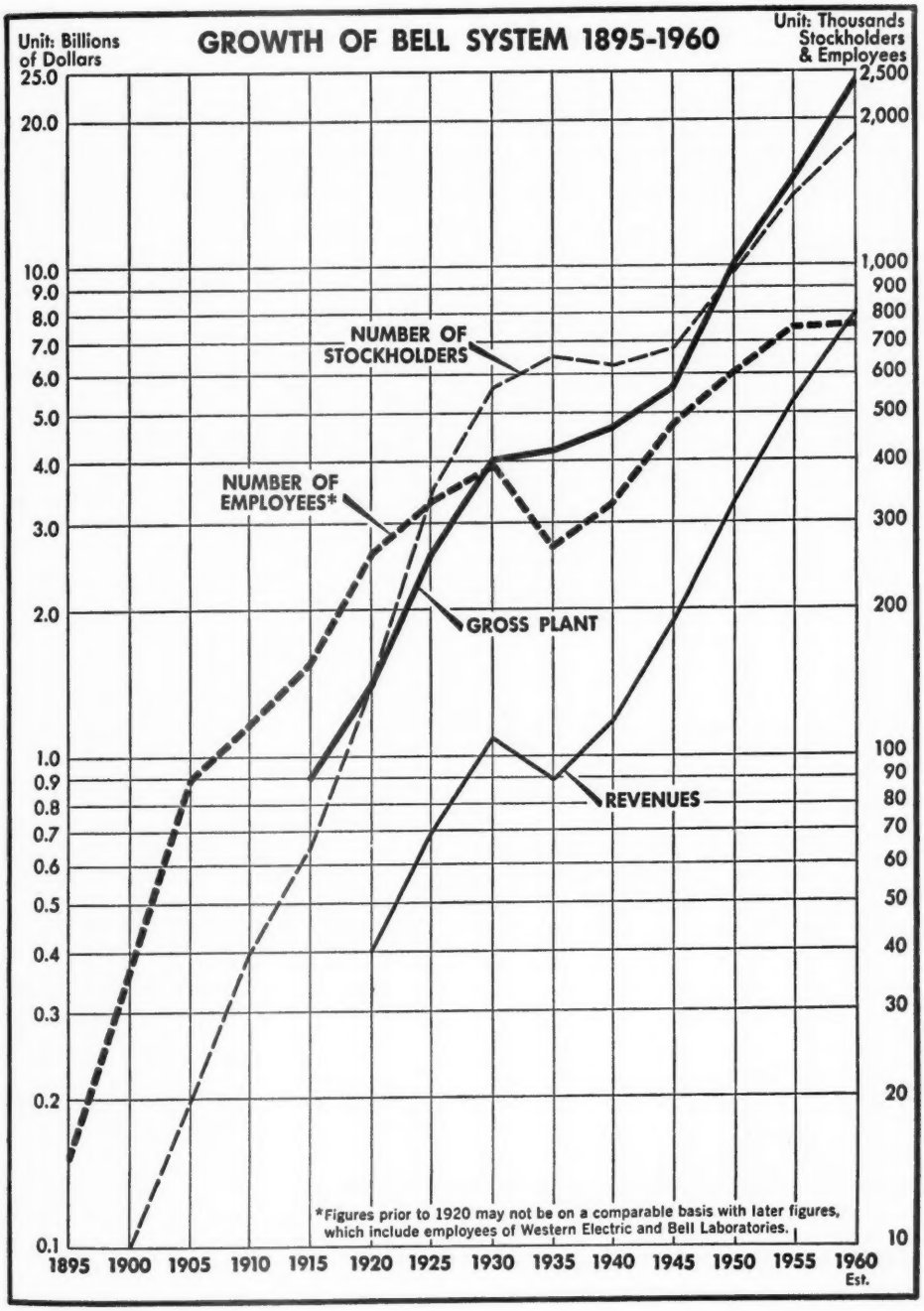
bonds could be sold on about a 4½-5 per cent yield basis, and then (as now) debt money was considered cheaper than equity money, but AT&T in 1930 had a debt ratio of only 29 per cent. On the other hand, electric utility holding company systems raised pyramids of debt in order to obtain the benefits of increased leverage, and of course the railroads had long followed a policy of issuing substantial debt. As a result, many electric utility holding companies went through bankruptcy in the early 1930's, or were broken up by the Securities and Exchange Commission under the Holding Company Act in later years—while the Bell system emerged from the depression years stronger than ever. In the 1930's, it was able to strengthen its position further by refunding its callable debt at lower rates of interest (taking advantage of the Roosevelt administration's "cheap money" policy). It also retired all callable issues of preferred stock, most of which had been issued at high dividend rates during the 1920's.

While the company might have taken still further advantage of the low money rates which came into vogue in the middle 1930's and continued during the 1940's, there was no capital growth during the 1930's and hence the financial policies of the 1920's continued unchanged. The company felt that continuity of the $9 dividend was an important factor in establishing strong investment appeal for the common stock at some later date, when large amounts of stock would have to be sold to help supply construction funds. In this connection a surplus of available earnings would be demanded or expected by investors as a guaranty of dividends, so as to attract their capital to the business.

As anticipated, following World War II the Bell system had to raise new capital on a scale unequaled by any other private enterprise in the world; since 1945 it has sold investors nearly $13 billion of securities or about three times its entire capital at the end of the War. Of this huge amount about 41 per cent was raised through sale of mortgage bonds and debentures, while the balance was equity capital. However, the program in the *immediate* postwar period was not easy. Earnings on the stock were declining due to inflationary wage increases and other operating costs; and the stock dropped from 200¼ in 1946 to a low of 138 in 1949. Fortunately, the system had a debt ratio of only 31 per cent at the end of the War, giving it substantial leeway for debt financing, and some $3 billion was therefore raised in debt issues and later on in convertible debentures.

The decision to issue convertibles was due to several factors: the decline in the quality of the debt (as indicated by investor appraisal) when the debt ratio exceeded 40 per cent; threatened saturation of the market with straight debt issues (life insurance companies curtailed their purchases when their portfolios became heavily loaded with Bell system bonds); and the fact that sale of convertibles would automatically bring about a reduction in debt in later years when earnings improvement should make the stock sufficiently attractive to induce conversion.

The management had decided that its objective should be a 30-40 per cent debt ratio as soon as conditions would permit. In 1956 an offer of stock was made to share owners (the first since 1930) and the last offering of convertibles was made in March, 1958. The company has continued to sell stock to employees under


GROWTH OF BELL SYSTEM 1895-1960
Unit: Billions of Dollars
Unit: Thousands Stockholders & Employees
NUMBER OF STOCKHOLDERS
NUMBER OF EMPLOYEES*
GROSS PLANT
REVENUES
*Figures prior to 1920 may not be on a comparable basis with later figures, which include employees of Western Electric and Bell Laboratories.
25.0
20.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
2,500
2,000
1,000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
1895
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960 Est.

its stock purchase plan, but all other new financing since then has been through numerous offerings of mortgage bonds by subsidiaries, or straight debentures by subsidiaries and the parent company. Currently the debt ratio is around 37 per cent.

In answering the criticisms of its policy with respect to maintaining a low debt ratio, the Bell system management has pointed out that as debt increases, its quality decreases, and as a result the cost of debt financing rises. Also, if greater risk is placed on the equity holder by issuing more senior capital, he will expect to be compensated for this by higher dividends.

Thus it seems obvious that it would be impossible to pass on to the utility customer the benefits of a higher debt ratio —and the state commissions would undoubtedly claim these benefits—and at the same time obtain bigger earnings for stockholders as the result of greater capital leverage. Bell's immense size and prestige also make it vital to its continued success to maintain top-quality credit.

Moreover, Bell system bonds will begin to mature in large amounts in less than a decade and new refunding issues must then be sold even though market conditions may not prove favorable at that time; it may also be necessary to continue raising large amounts of new capital.

Regarding the charge that it is giving up tax savings by maintaining a low debt ratio, the Bell system feels that the long-run financial stability of the business is quite as important as trying to minimize tax payments. Moreover, any substantial saving in taxes would mean that the stockholders in their individual capacity as taxpayers would probably have to make up the difference, so that what they might gain through more dividends from Bell might be partially offset by higher individual taxes.

Many important industrial companies have little or no debt, presumably due to the cyclical risks of their business and the desire to maintain a conservative setup. Even electric power companies do not go in for very high debt ratios nowadays despite the generally stable character of the business. An analysis of 120 electric operating utilities indicates that about one-third of them have less than 50 per cent debt, 38 per cent between 50 and 55 per cent, and only 29 per cent above 55 per cent (six companies run over 60 per cent). A study of the Moody indexes clearly shows that as electric company debt ratios have increased, their credit ratings have declined.

The Bell management maintains that the risks of the telephone business are naturally greater than those of the electric power business. This greater risk is due primarily to greater volatility of revenues and greater rigidity of expenses. During 1929-34 Bell revenues declined about 17 per cent while electric utility revenues were down only about 6 per cent. During the brief postwar recessions of 1949, 1954, and 1958, neither the Bell system nor the electric utilities suffered appreciably, either with respect to revenues or share earnings; but these periods were not depressions in the old-fashioned sense and were too short to afford any real test of earnings.

Electric revenues are comparatively stable during periods of business decline because of several factors. Contraction of industrial usage has smaller effect on total revenue than the relative decline in kilowatt-hours because this usage comes off the lowest end of the rate scale. Domestic usage is usually well maintained

because the customer has no alternative source of power for heating, lighting, etc. In contrast, cutbacks in telephone service are customary in bad times—some residential customers may give up their service altogether. As recently as the 1958 recession, and during the 1959 steel strike, a number of the Bell system companies experienced losses in number of customers during certain months of these peri-

CALENDAR OF PROPOSED UTILITY OFFERINGS

October 1, 1960-March 31, 1961

Date of Bidding Or Sale	*Approx. Amount (Millions)*		*Method Of Offering*	*Moody Rating**
		Bonds and Debentures		
—	$ 50	Tennessee Valley Authority	C	—
—	30	Northern Natural Gas	N	A
—	6	Atlanta Gas Light	—	A
10/	15	Idaho Power	C	Aa
10/	30	Wisconsin Electric Power	C	Aa
10/	25	Natural Gas Pipe Line	N	A
10/4	5	Southern Nevada Power	N	Baa
10/4	30	San Diego Gas & Electric	C	Aa
10/6	30	Columbia Gas System	C	A
10/18	16	Louisville Gas & Electric	C	Aa
10/19	25	Pacific Lighting Gas Supply S. F. Debs	C	—
10/20	25	Florida Power Corp.	C	Aa
10/25	250	American Tel. & Tel.	C	Aa
10/31	60	United Gas Corp.	C	—
10/	30	Wisconsin Electric Power	C	Aa
11/1	60	Pacific Gas & Electric	C	Aa
11/3	12	Georgia Power	C	A
11/14	20	New Jersey Bell Telephone	C	Aaa
11/17	6	Public Service of New Hampshire	C	A
11/22	75	Consolidated Edison	C	Aa
12/5	75	Southern Bell Telephone	C	Aaa
12/6	35	Northern States Power	C	Aa
12/12	35	Consumers Power	C	Aaa
2/—/61	15	Southwestern Public Service	—	A
3/—/61	35	Virginia Electric & Power	—	Aa
3/15/61	15	Rochester Gas & Electric	—	Aa
—	30	Commonwealth Edison	C	—
—	10	Missouri Public Service	N	—
—	65	Alberta Gas Trunkline	—	—
—	30	Long Island Lighting	C	A
—	35	Trunkline Gas	—	—
—	65	Panhandle Eastern Pipe Line	—	A
—	10	Iowa Electric Light & Power	N	—
—	3	Lake Superior District Power	—	A
		Preferred Stock		
10/—/60	15	Natural Gas Pipeline	N	—
10/ 4/60	2	Southern Nevada Power	N	—
11/16/60	8	Merrimack-Essex Electric	C	—
12/13	?	Public Service Electric & Gas	N	—
2/—/61	3	Southwestern Public Service	—	—
—	20	Baltimore Gas & Electric	—	—
—	20	Pacific Lighting System	N	—
—	20	Houston Light & Power	C	—
—	15	Texas Eastern Transmission	—	—
		Common Stock		
10/	5	Idaho Power	N	—
10/	5	Pacific Gas Transmission	—	—

*Preliminary, or rating of similar issues. C—Competitive. N—Negotiated.

ods. Toll service can also be contracted easily when economic conditions require, and cheaper forms of communication substituted. Extension telephones and certain premium and luxury services, representing the more profitable elements of service, can be discontinued in order to reduce telephone bills.

Electric utilities also have the advantage over phone companies with respect to control of costs. Wages are the principal expense of the telephone industry and have become more inflexible in recent years; they absorb nearly 40 per cent of revenues as compared with only about 16 per cent annually for the electric companies.

It has frequently been cited that the telephone is much more of a necessity than ever before, and there is little chance that the experience of the past will hold in the future. But careful study leads to the conclusion that the telephone business might be subject to even greater volatility today than in earlier years. For example, the very fact that 80 per cent of the households in the U. S. now have telephones as contrasted with 40 per cent before the War, means that many more of the telephone users today are marginal customers. Another item of concern is the fact that a greater proportion of revenues are obtained from toll services, the most volatile part of revenues. The mix of customers is also changing, with the more volatile residential customers accounting for an increasing part of the total.

Impartial observers have, on many occasions, recognized the greater risk of the telephone industry. One of these groups is the National Assoiation of Railroad and Utilities Commissioners. The NARUC's annual reports on corporate finance have frequently pointed out the greater volatility and risks of the telephone industry. Credit rating agencies, such as Moody's, have rated the risk of the Bell system as between that of the industrials and the electrics. For example, American Telephone and Telegraph debentures are rated only Aa despite the fact that charges are earned about six times, while Consolidated Edison enjoys the same rating with less than four times coverage.

Likewise, the study made by the U. S. Department of Commerce as to various industries' sensitivity to income change showed that revenue fluctuations of the telephone business are twice as sensitive as the electric utilities. Even the U. S. Congress recognized the telephone industry's greater risk, in the Excess Profits Act passed during the Korean War, the telephone industry being classed in the same category as the airlines.

In general, therefore, the Bell system's conservative fiscal policy has paid off well to date. If the federal government itself had followed a correspondingly conservative policy, some of our present fiscal worries might have been avoided.

Nuclear Power-generating Costs

The Atomic Energy Commission recently issued a 98-page book on the Civilian Power Reactor Program—"Part II, Economic Potential and Development Program As of 1959." Cost projections in most cases were based on the uranium-plutonium fuel cycle and no consideration was given to possible advantages from the use of the thorium cycle. The report was prepared by the commission's Division Reactor Development with the assistance of the following: General Nuclear Engineering Corporation — Com-

bustion Engineering, Atomic Power Development Associates, Atomics International, Westinghouse, duPont, and Oak Ridge National Laboratory. Comments and suggestions were also received from Alco Products, Allis-Chalmers, Babcock & Wilcox, General Dynamics, General Electric, Martin Company, Nuclear Development Corporation, Sanderson & Porter, and Argonne National Laboratory. The report listed the following factors in the economics of nuclear plants, for which it was necessary to use specified values and procedures in making the cost projections:

1. The buy-back price for plutonium and U-233.
2. The method of charging for operating materials such as D_2O and the use charge for U.
3. Changes in the price of fissionable material.
4. Changes in capitalization rates.
5. Different capacity factors.
6. Ratio of indirect to direct cost.

FOLLOWING were the comparative kilowatt-hour generating costs for various types of reactors, as compared with current cost for coal of about 6-7 mills:

	MILLS PER KWH.	
	Current Cost	*Potential Cost*
Pressurized Water	9.3	7.8
Boiling Water	9.6	7.5
Light Water Moderated Super-heat	—	6.7
Organic Cooled	11.5	6.7
Sodium Graphite	11.2	7.4
Gas Cooled (enriched fuel)	10.4	8.0
Fast Breeder	13.3	7.5
Aqueous Homogeneous	—	11.3
Heavy Water	12.5	8.2
Gas Cooled (natural uranium)	11.9	—

Based on the "potential" costs which may not be realized until around 1966-69, we may eventually reach a cost basis which would be competitive with coal. The future savings in "potential" costs (compared with present costs) will be mainly in fixed charges and fuel cycle cost; practically no reduction is predicted for cost of operation, maintenance, and insurance, at least for pressurized water and boiling water reactors.

FINANCIAL DATA ON ELECTRIC UTILITY STOCKS

Annual Rev. (Mill.)			*9/22/60 Price About*	*Dividend Rate*	*Approx. Yield*	*Recent Share Earns.*	*% Incr. In Sh. Earn. Recent*	*% Incr. In Sh. Earn. 5-yr. Aver.*	*Price-Earn. Ratio*	*Div. Payout*	*Approx. Book Value*
$324	S	American Elec. Power	56	$1.80	3.2%	$2.53Au	7%	8%	22.1	71%	$24
63	O	Arizona Pub. Serv.	44	1.20	2.7	*1.91Je	*11	* 6	*23.0	63	18
13	O	Arkansas Mo. Pwr.	21	1.00c	4.8	1.46Je	10	3	14.4	68	10
38	S	Atlantic City Elec.	37	1.10	3.0	*1.50Jy	* 8	* 9	*24.7	73	12
169	S	Baltimore G. & E.	28	1.00	3.6	1.43Je	4	8	19.6	70	13
8	O	Bangor Hydro-Elec.	45	2.20	4.9	3.33Au	11	5	13.5	67	28
7	O	Black Hills P. & L.	33	1.48	4.5	2.66Jy	12	4	12.4	56	22
116	S	Boston Edison	69	3.00	4.3	3.69De	4	4	18.5	81	51
31	A	Calif. Elec. Power	19	.84	4.4	*1.08Je	*D6	*10	*17.6	78	12
24	O	Calif. Oreg. Power	36	1.60	4.4	*1.87My	*D3	*	*19.3	86	26
10	O	Calif. Pac. Util.	23	.90	3.9	1.42Jy	12	4	16.2	63	12
76	S	Carolina P. & L.	43	1.32	3.1	2.31Au	12	6	18.6	57	21
34	S	Cent. Hudson G. & E.	26	1.00	3.8	*1.44Je	* 7	* 8	*18.1	67	13
26	O	Cent. Ill. E. & G.	41	1.44	3.5	2.32Jy	10	12	17.7	62	15
43	S	Cent. Ill. Light	41	1.52	3.7	2.47Au	12	10	16.6	62	18
60	S	Cent. Illinois P. S.	54	1.92	3.6	2.93Au	10	7	18.4	66	20
20	O	Cent. Louisiana Elec.	28	.90	3.2	1.21	16	7	23.1	74	19
42	O	Cent. Maine Pwr.	27	1.40	5.2	*2.05Au	*27	*	*13.2	68	21
160	S	Cent. & South West	36	.96	2.7	1.38Je	2	6	26.1	70	11
12	O	Cent. Vermont P. S.	20	1.08	5.4	*1.42Jy	* 5	* 2	*14.1	76	13
140	S	Cincinnati G. & E.	41	1.50	3.7	2.27Je	27	3	18.0	66	16

Annual Rev. (Mill.)		(Continued)	9/22/60 Price About	Dividend Rate	Approx. Yield	Recent Share Earns.	% Incr. In Sh. Earn. Recent	% Incr. In Sh. Earn. 5-yr. Aver.	Price-Earn. Ratio	Div. Payout	Approx. Book Value
8	O	Citizens Util. "B"	17	.56	3.3	.74Je	13	6j	23.0	76	4
130	S	Cleve. Elec. Illum.	56	1.80	3.2	3.10Je	11	9	18.1	58	26
7	O	Colo. Cent. Power	32	.75	2.3	1.22Je	13	6	26.2	61	11
52	S	Columbus & S. O. E.	50	1.80	3.6	2.92Jy	38	6	17.1	62	24
454	S	Commonwealth Edison	63	2.00h	5.6h	3.87Jy	5	10	16.3	52	33
16	A	Community P. S.	32	1.00	3.1	1.49Je	8	6	21.5	67	12
85	O	Conn. Lt. & Pr.	25	1.20	4.8	*1.49Au	* 7	* 4	*16.8	80	15
615	S	Consol. Edison	63	3.00	4.8	*3.83Je	*12	* 6	*16.5	78	49
258	S	Consumers Power	59	2.60	4.4	3.68Au	4	5	16.0	71	35
90	S	Dayton P. & L.	58	2.40	4.1	3.25Je	1	4	17.8	74	30
53	S	Delaware P. & L.	45	1.14	2.5	1.62Je	5	9	27.8	70	26
267	S	Detroit Edison	47	2.00	4.3	2.54Au	8	3	18.5	79	27
156	A	Duke Power	49	1.40c	2.9	2.22Je	5	10	22.1	63	20
101	S	Duquesne Light	25	1.18	4.7	*1.48Je	* 7	* 5	*16.9	80	10
36	O	East. Util. Assoc.	40	2.20	5.5	2.75Jy	D10	6	14.6	80	26
3	O	Edison Sault Elec.	17	.90	5.3	1.30Ma	3	6	13.0	70	9
17	O	El Paso Elec.	43	1.16	2.7	1.73Jy	10	7	24.9	67	11
13	S	Empire Dist. Elec.	33	1.36	4.1	1.89Je	8	7	17.5	72	16
62	S	Florida Power Corp.	35	.80	2.3	1.22Je	13	10	28.7	66	12
155	S	Florida P. & L.	59	.96	1.6	2.03Je	9	17	29.1	47	15
4	O	Florida Pub. Utils.	21	.72	3.4	1.36Je	12	9	15.4	53	10
231	S	General Pub. Util.	26	1.12	4.3	*1.56Je	* 7	* 7	*16.7	72	15
7	O	Green Mt. Power	20	1.10	5.5	1.45Au	12	3	13.8	76	12
78	S	Gulf States Util.	37	1.00	2.7	1.41Au	7	8	26.2	71	11
54	A	Hartford Electric	64	3.00	4.7	*3.64Je	*D5	NC	*17.6	82	43
27	O	Hawaiian Elec.	55	2.50	4.5	3.48Je	8	7	15.8	72	34
105	S	Houston L. & P.	83	1.60	1.9	3.23Au	10	6	25.7	50	21
34	S	Idaho Power	51	1.80	3.5	2.90Au	16	1	17.6	62	27
104	S	Illinois Power	57	2.00	3.5	2.90Jy	19	14	19.6	70	20
54	S	Indianapolis P. & L.	48	1.70	3.4	2.58Je	12	9	18.6	66	18
33	S	Interstate Power	19	.95	5.0	1.18Je	—	4	16.1	76	8
42	S	Iowa Elec. L. & P.	45	1.80	4.0	2.63Au	20	6	17.1	68	20
51	S	Iowa-Ill. G. & E.	41	1.90c	4.6	2.68Je	10	4	15.3	71	20
47	S	Iowa P. & L.	40	1.60	4.0	2.39Je	14	3	16.7	66	18
40	O	Iowa Pub. Service	18	.80	4.4	1.23Au	5	4	14.6	65	10
17	O	Iowa Southern Util.	35	1.48	4.2	2.17Au	—	9	16.1	68	20
64	S	Kansas City P. & L.	58	2.20	3.8	3.24Jy	9	6	18.0	68	29
36	S	Kansas G. & E.	53	1.64	3.1	2.64Au	D2	7	20.0	62	22
54	S	Kansas P. & L.	38	1.42	3.7	2.46Je	13	9	15.4	58	17
47	O	Kentucky Util.	38	1.60	4.2	2.69Je	3	6	14.1	59	23
8	O	Lake Superior D. P.	25	1.28	5.1	1.73Je	5	4	14.5	74	17
136	S	Long Island Lighting	42	1.40	3.3	*2.15Je	* 9	* 9	*19.5	65	20
66	S	Louisville G. & E.	51	1.40	2.7	2.71Je	18	8	18.8	52	21
12	O	Madison G. & E.	28	1.00	3.6	2.03Je	6	3	13.8	49	39
5	A	Maine Pub. Service	23	1.24	5.4	1.51Jy	4	2	15.2	82	14
8	O	Michigan G. & E.	82	1.70c	5.1	5.61Je	—	12	14.6	30	29
198	S	Middle South Util.	33	1.00	3.0	1.39Jy	5	7	23.7	72	14
31	S	Minn. P. & L.	38	1.60	4.2	2.37Au	4	5	16.0	67	21
16	S	Missouri P. S.	21	.72f	3.4	1.15Jy	26	5	18.3	63	8
8	O	Missouri Util.	31	1.36	4.4	1.68Ma	—	—	18.0	81	18
46	S	Montana Power	28	1.12	4.0	*1.43Je	—	* 8	*19.6	78	9
172	S	New England Elec.	22	1.08	4.9	1.36Je	4	3	16.2	79	15
52	O	New England G. & E.	24	1.16	4.8	1.71Jy	D1	5	14.0	68	17
105	S	N. Y. State E. & G.	28	1.20	4.3	*1.82Au	*D6	* 8	*15.4	66	18
285	S	Niagara Mohawk Power	38	1.80	4.7	*2.31Je	*12	—	*16.5	78	23
104	O	Northern Indiana P. S.	62	2.20	3.5	3.32Je	13	5	18.7	66	26
170	S	Northern Sts. Power	28	1.10	3.9	1.46Je	3	6	19.2	75	12
12	O	Northwestern P. S.	23	1.10	4.8	1.75Je	17	6	13.1	63	12
151	S	Ohio Edison	37	1.48	4.0	2.10Jy	10	6	17.6	70	17
58	S	Oklahoma G. & E.	34	1.12	3.3	1.39Au	D7	6	24.5	81	11
29	S	Orange & Rockland Utils.	38	1.10	2.9	*1.53De	*20	*14	*24.8	72	14
19	O	Otter Tail Power	36	1.80	5.0	2.35Jy	D4	6	15.3	77	24
535	S	Pacific G. & E.	67	2.60	3.9	3.89Je	3	5	17.2	67	42
58	O	Pacific P. & L.	40	1.60	4.0	*2.06My	*D7	* 4	*19.4	78	23

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138	S	Penn P. & L.	28	1.25	4.5	1.78Jy	7	5	15.7	70	13
264	S	Phila. Elec.	52	2.24	4.3	2.91Je	4	5	17.5	77	26
40	O	Portland G. E.	32	1.32	4.1	1.97Au	18	4	16.2	67	18
82	S	Potomac Elec. Power	31	1.32	4.3	*1.94Je	*36	* 9	*16.1	68	18
102	S	Pub. Serv. of Colo.	66	1.90	2.9	2.79Je	4	6	23.7	68	27
369	S	Pub. Serv. E. & G.	41	1.80	4.4	2.24Je	D7	4	18.3	80	24
88	S	Pub. Serv. of Ind.	47	2.10	4.5	2.61Jy	D8	3	18.0	80	27
34	O	Pub. Serv. of N. H.	20	1.04	5.2	1.39Au	12	2	14.4	75	14
17	O	Pub. Serv. of N. M.	37	1.00	2.7	1.51Je	D2	10	24.5	66	12
32	S	Puget Sound P. & L.	35	1.56	4.5	2.11Je	2	9	16.6	74	23
72	S	Rochester G. & E.	46	1.80b	3.9	*3.11Je	*D3	* 7	*14.8	58	30
10	S	St. Joseph L. & P.	37	1.60c	4.3	2.28Je	22	6	16.2	70	18
71	S	San Diego G. & E.	29	1.20	4.1	1.91Jy	12	8	15.2	63	18
12	O	Savannah E. & P.	31	1.12	3.6	1.27Jy	2	1	24.4	88	12
12	O	Sierra Pacific Pr.	47	1.60	3.4	2.51Je	17	14	18.7	64	17
280	S	So. Calif. Edison	62	2.60	4.2	*4.19Je	NC	6	14.8	62	42
56	S	So. Carolina E. & G.	45	1.40	3.1	1.93Je	13	6	22.6	70	19
8	O	Southern Colo. Pr.	20	.90	4.5	1.09Ma	D30	—	18.3	83	13
297	S	Southern Co.	47	1.40	3.0	2.01Au	7	9	23.4	70	17
21	S	So. Indiana G. & E.	36	1.60	4.4	2.55Jy	4	2	14.1	61	21
9	O	So. Nevada Power	41	1.10	2.7	2.06Jy	14	5	20.0	53	15
4	O	Southwestern E. S.	18	.72	4.0	1.01Jy	3	5	17.8	71	7
47	S	Southwestern P. S.	28	.84	3.0	1.14Jy	16	7	24.6	76	7
36	A	Tampa Electric	35	.72	2.1	1.20Au	33	7	29.1	60	10
183	S	Texas Utils.	75	1.92	2.6	3.02Jy	6	9	24.8	64	21
47	S	Toledo Edison	19	.70	3.7	1.10Je	D5	2	17.3	64	9
20	O	Tucson G. E. L. & P.	30	.80	2.7	1.24Je	24	8	24.2	65	9
147	S	Union Electric	38	1.80	4.7	*2.11Je	*23	* 5	*18.0	85	17
39	O	United Illum.	28	1.38	4.9	*1.75Ma	*D1	* 1	*16.0	79	16
6	O	Upper Peninsula Pr.	30	1.60	5.3	2.10Je	22	—	14.3	76	19
50	S	Utah Power & Light	37	1.32	3.6	1.90Jy	3	5	19.5	69	19
151	S	Virginia E. & P.	48	1.20	2.5	1.84Au	13	9	26.1	65	17
36	S	Wash. Water Pr.	42	2.00	4.8	*2.35Au	*D14	* 7	*17.9	85	29
152	S	West Penn Elec.	40	1.70	4.3	2.34Jy	D1	5	17.1	73	18
82	O	West Penn Power	66	3.00	4.5	3.51Je	1	3	18.8	85	26
13	O	Western Lt. & Tel.	45	2.00	4.4	3.33Jy	7	6	13.5	60	27
32	O	Western Mass. Cos.	24	1.20	5.0	1.62Au	D4	—	14.8	74	18
134	S	Wisc. El. Pr. (Cons.)	42	1.80	4.3	2.68Je	3	7	15.7	67	27
48	O	Wisconsin P. & L.	37	1.48	4.0	2.43Je	11	7	15.2	61	21
46	S	Wisconsin P. S.	30	1.30	4.3	2.05Jy	10	5	14.6	63	17
		Averages			3.9%		8%	6%	18.4	69%	
		Foreign Companies									
217	A	Amer. & Foreign Pr.	7	$ .50	7.1%	$1.30De	D33%	0%	6.4	38%	$32
151	A	Brazilian Traction	4	—	—	.58De	D10	—	6.9	—	28
97	A	British Col. Pr.	35	1.40	4.0	2.48De	27	9	14.1	56	36
20	O	Calgary Power	24	.40	1.7	1.02Je	7	18	23.5	39	6
18	A	Gatineau Power	38	1.50	3.9	1.98De	D22	—	19.2	76	21
16	A	Quebec Power	35	1.60	4.6	2.41De	3	9	14.5	66	26
77	A	Shawinigan Water & Pr.	25	.68	2.7	1.45De	D10	8	17.2	47	19

*Deferred taxes resulting from liberalized depreciation are not normalized. If they had been normalized the price-earnings ratio would be higher, and the rate of increase in share earnings would be smaller. D—Decrease. NC—Not comparable. A—American Stock Exchange. O—Over-counter or out-of-town exchange. S—New York Stock Exchange. Ja—January; F—February; Ma—March; Ap—April; My—May; Je—June; Jy—July; Au—August; Se—September; Oc—October; N—November; De-December. b—Also 3 per cent stock dividend (paid January 25, 1960) included in the yield; similar dividends are paid annually, representing balance of earnings. c—Also stock dividend in 1959. e—Also regular annual 3 per cent stock dividend (paid each year end), included in the yield. f—Also regular stock dividend of one-half per cent quarterly, included in yield (paid since 1956). h—Also 2.4 per cent stock dividend to be paid December 1, 1960, included in yield; stock dividends are paid annually, reflecting balance of earnings. j—The rate of increase would be 12 per cent if the present number of shares had been used to compute share earnings of past years, instead of using the number of shares actually outstanding at the end of each year.

What Others Think

Controlled Growth—the Key to Future Telephone Industry Success

GROWTH was the key word to an inspiring message brought to the general assembly meeting of the Telephone Pioneers of America in New York city on September 22nd by Frederick R. Kappel, president of the American Telephone and Telegraph Company. By way of background, Kappel noted the growth of new industries, products, services, space developments, and, of course, growth in government and taxes. There are more homes, more families, more old people and more young people, requiring more teachers for the increasing number of schools. In the United States and Canada there will be 90 million more people in the next twenty years, and in those same twenty years world population will likely increase by a billion.

The Bell system chief then observed that the growth of communications proceeds even faster, both in North America and overseas. Last July the AT&T put in some testimony before the Federal Communications Commission about the need for using satellites to handle world-wide telephone messages and television. It was suggested that the number of telephones in the United States might well triple in the next twenty years and that by 1980 there could well be 500 million telephones throughout the world, compared with about 135 million today. On that basis it was suggested that the industry would be handling 100 million overseas conversations a year—more than 25 times as many as we expect to handle in 1960.

THEN Mr. Kappel had these comments about economic growth in general:

> . . . This is a popular and important subject nowadays. It has political overtones. There are many theories being discussed. Someone says, "Look — Russia is growing faster than we are; we must hurry up." Someone else says, "Our economy ought to grow 5 or 6 per cent a year, instead of 3 or 4 per cent." And this thought is followed by still another—namely, that we ought to grow more in some directions and less in others; in other words, our economic growth should be steered into certain channels and away from other channels.
>
> What do ideas like this mean? What are the implications? What is at stake?
>
> Certainly we want and must have economic growth. We cannot improve living standards without it. We cannot create and maintain the military strength we need without it. And our economic growth must outrun popula-

tion growth if we are to achieve these aims. By living standards I do not mean just personal comforts and conveniences—I mean all the elements that make for human well-being: housing, education, health, clean cities, recreational facilities, power, transport, communications, municipal services, and all the rest.

No one will quarrel with these objectives. Some economic theorists hold, however, that the essential ingredients for vigorous growth are greater government expenditure and more and more government control of the economy. Without going into the pros and cons of the argument, it seems to me it raises some very fundamental questions. If we accept it, are not we thereby accepting the basic idea that government management *is* better than private enterprise? That government management will bring about more and better productive effort than a free economy of free people is capable of achieving? That government can run the telephone business better than we can? That government management is best for our country and best for you and me?

In sum, if we accept the premise, does not it push us all the way to the conclusion that a free economy should be superseded by a planned economy—controlled by government, directed by government, run by government from start to finish?

THOSE in the United States who advocate that the government should beef up and steer economic growth rarely lead their arguments to this conclusion. However, Mr. Kappel recalled that the late Aneurin Bevan of the British Labor party, speaking of his own country, put it right on the line when he said: "We will never be able to get the economic resources of this nation fully exploited unless we have a planned economy in which the nation itself can determine its own priorities."

This is the ultimate position boldly stated. To oppose it is certainly not to say that large government expenditures are unnecessary. They are necessary for defense and for many other vital purposes that only the government can accomplish. The government will grow as the need for these things increases. Mr. Kappel then referred to the difference between necessary government growth and government management of growth:

> If we do not believe in government management, however, then we *must* believe in ourselves as free and responsible people. We must not only believe—we must act like, vote like, and be free and responsible people. The advocates of government management have done one very useful service. They have clearly dramatized the challenge to the individual. They are putting private industry to the test. What will be our response as individuals and as industries? And getting down to our own business, must not you and I—all of us—ask ourselves, "How shall we as telephone people make the best contribution we can to vigorous, worthwhile growth?

IS all growth good? Everyone who has crab grass in his lawn knows it is not. Children can grow too fast. Cancer cells run riot. And the worst economic headache we have is our agricultural surplus, notwithstanding all the efforts of government management to alleviate it. (This last, by the way, makes its own clear comment on whether government will ever be a cure-all.) Mr. Kappel said on this point:

Growth needs discipline. Growth must be orderly. Growth must be healthy and sound. These requirements apply in all management, whether it be by government or by a business. In our own business if we miscalculate our rate and direction of growth, we will waste construction dollars in one place and fall short of meeting needs in another. To grow well we must understand needs—not only what they are but where they are—not only what they are today, but what they will be tomorrow.

Nor is the growth only a matter of size. [Earlier in this discussion] I quoted figures on future telephones and overseas messages. Such figures can describe one aspect of growth. They can define enlargement, expansion, magnification. But this is not the whole story. A man really grows when his brain works, not when his head swells. Growth should have purpose. Another way to say it is that we must grow toward something, we must grow up to something, we must have goals to grow up to.

KAPPEL then referred to his audience, the telephone pioneers of whom there are now 200,000 with the prospect of 300,000 by 1968 or 1969. But size alone, he said, is no criterion of true worth. There must be growth in achievement and objectives. Repeating an earlier comment to telephone company employees, Kappel said:

> . . . We must grow as a business that is regarded as alert, efficient, and always up to date. We must grow as a business that knows how to make improvements in service pay. We must grow as a business that can meet competition wherever it may develop. We must grow as a business in which ideals of service and marketing talent and zest for discovery all meet and mingle and strengthen each other.

Kappel then counted the blessings of the industry in terms of goals—top-quality service, broadened opportunities for customers, investors, employees, the goal of meeting and beating competition from the research laboratory to the customer's home or office. He referred to all-out competition which the telephone industry faces in science, techniques, prices, markets, salesmanship.

HE mentioned other goals: efficiency, new and better ways of service, improving and strengthening the communications networks, producing better earnings for better economic strength. He concluded:

> Surely we have an abundance of goals for growth. Surely also, the way we grow will have great influence on the future. Let us never lose sight of the fact that our business, communications, is one of the great energizing services of modern life. All enterprise depends on it. Every community depends on it. The military depends on it. Government depends on it. Civilization depends on it.
>
> Moreover, when we say that all these depend on communications, what we really mean is that they depend on communication people. On you. On me. On every one of us. And everything that can be said about the growth of our business and service, our competence, our contribution to economic growth, our pioneering, our will to do the best possible job, comes down in the end to a single thing: How shall we grow as individual men and women?
>
> Will we do a great job or will we not? Not just a good job, a competent job, a satisfactory job—but a great job? The answer lies only in ourselves. I said that as an industry we have important goals for growth.I have mentioned several of them. But the most important, the most vital goals of all are the goals we set for developing our personal talents and powers; and the most important growth, and the key to all other growth, is the personal growth each one of us achieves.

THE speaker ended on this note of individual challenge. He encouraged the pioneers to ask themselves questions about what they could do, what they wanted to accomplish, and to answer the questions for themselves and go about meeting the challenge implied.

The Forces Shaping Our Future

IN the summer issue of the *Bell Telephone Magazine,* Harry Schwartz, specialist on Soviet affairs, *The New York Times,* writes a stimulating article on what our nation's future will possibly be like and why. Population, technology, new social and political concepts, and the diffusion of power among nations are discussed with perceptive insight. Here are some of the factors that will affect the lives of all us during the rest of the twentieth century: Schwartz points out that the rate of change in human affairs is speeding up, that there are a greater number of changes that affect us directly or indirectly. And this trend, he says, is accelerating. It should ultimately make successful planning, both in business and personal life, more difficult than it has ever been.

Schwartz recounts the vast changes that have taken place in just forty-five years. Going back to 1915, he recalls that living then was geared to the speed of a horse. The auto, radio, moving pictures, and even the telephone were in their infancy. Income taxes were only a matter of interest to the very rich. There was no such thing as unemployment insurance or government regulation of wages.

AND rockets were only things shot off at Fourth of July celebrations. Schwartz states:

> But if the changes that have taken place since 1915 have been many and profound, the hard fact is that the present outlook is for the world of the year 2005—forty-five years from now—will be even more different from 1960 than 1960 is from 1915. This is said, of course, on the uncertain assumption that there will be a world with human beings in 2005 and that we will not have blown ourselves up with the terrible weapons at our command.

ONE of the irresistible forces at work is population increase, Schwartz says. While it required only about a century for the world's population to double from 1.5 billion in 1860 to 3 billion today, United Nations estimate it will take less than forty years for it to double again. By the year 2000, humanity will probably number between 6 and 7 billion persons. The United States' present population of 180 million is likely to have passed the 300 million mark by that year. Schwartz continues:

> . . . there is the dizzying pace of scientific and technological progress . . . the annual volume of research done in the world in a year like 1960 exceeds the volume of research done in any decade before 1910 and perhaps exceeds the volume of research done in any century before 1800. There is no more revolutionary force challenging existing habits of thought and existing ways of doing things.

Schwartz believes some of the near-term results of research now in progress are quite clear. He predicts human colonies on the moon in a decade or so; large-scale installations for producing electric power from controlled thermonuclear—tamed hydrogen bomb—reactions. Biologically, he thinks we shall have learned how to control the sex—and other traits—of newborn human beings. And the entire field of human management may be revolutionized by the large-scale use of computers and linear programing, as well as other mathe-

matical techniques now being developed.

New Social and Political Concepts

THE changing conception of American society and of the proper rôle of government in relation to its citizens will play a dominant part in the future of all of us.

The challenge posed by the rise to military, political, and economic power of the Soviet Union has goaded us into setting our national sights higher. There has been much debate on the nature of our national purposes and how they shall be achieved. There are evident trends that point to increased importance of government in our future society. Says Schwartz, "Private business leaders will have to do some very fundamental thinking if their institutions are to survive free in the face of the mounting challenges posed by the forces sketched above."

The rapid spread of industrial, technological, and scientific capability throughout the world among former backward or colonial countries is altering the shape of the future. Monopoly by nations of industrial and scientific knowledge and capability is becoming a thing of the past. Schwartz states:

> . . . Steel mills are going up everywhere in the world from India and China to Iraq, Cuba, Brazil, and Argentina. In the late 1950's, two young Chinese physicists won the Nobel Prize for a fundamental discovery in nuclear physics. Even more recently a young Japanese invented the tunnel diode, a major contribution to electronics.

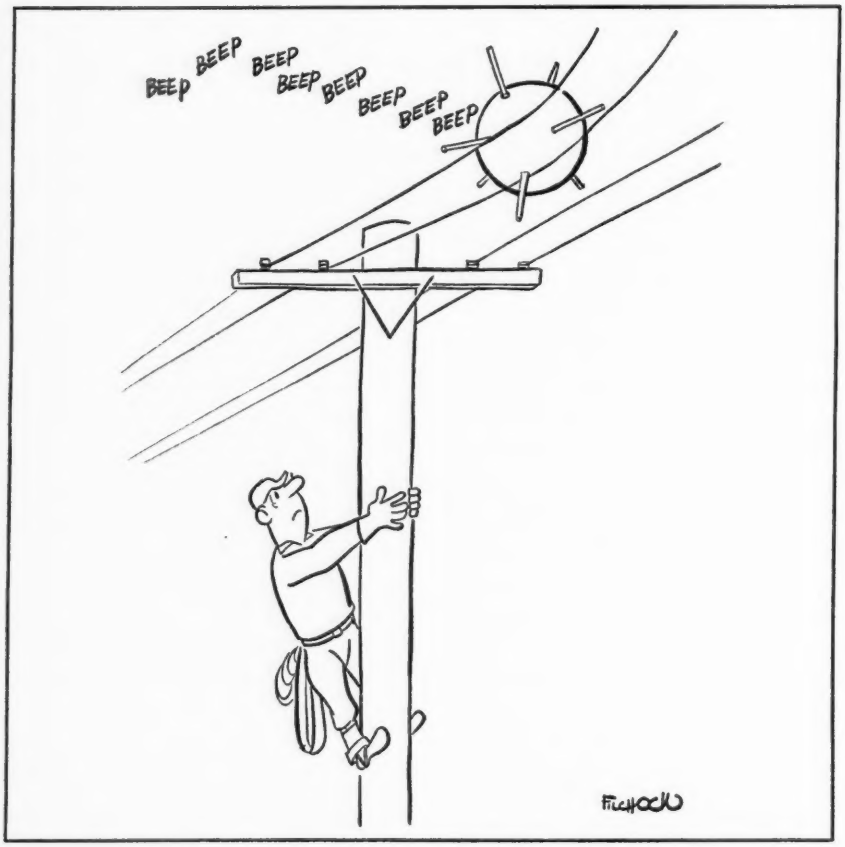
The Diffusion of Power

TAKING place today, Schwartz says, is a diffusion of power. Only fifteen years ago, at the end of World War II, the United States was clearly the strongest power in the world. Now it is commonplace to speak of the military stalemate between the United States and the Soviet Union. And looking to the future, the time will come when Communist China—whose population is expected to grow from 600 million or so to 1.6 billion in 2000—and India and Brazil will have become first-class military, economic, and political world powers.

There are other forces at work besides rising population, growing technological mastery of nature, changing thinking about the nature of our society, and the diffusion of the bases of national strength throughout the nations of Asia, Africa, and South America. But these are enough to foreshadow a future that will be vastly different from either the present or the past. It will pose many business and personal problems, Schwartz says. He believes we can best gird ourselves to meet them by understanding them and thus making the personal adjustments that they make necessary.

USITA Management Development School

A RATHER unusual graduation exercise took place on the campus of the University of Kansas last August 5th. It was the third annual graduation of members who have successfully completed the course of the Management Development Program of the United States Independent Telephone Association. The basic objective of the USITA Management Development Program, which has been conducted in collaboration with the School of Business of the University of Kansas, is to



help telephone executives and administrators prepare themselves for effective managerial leadership in the critical years to come. It is evident from all reports that these men have come a long way toward achieving this objective in the comparatively short space of time.

The forty-six graduates represent 35 independent telephone companies operating in 25 states. Dr. James R. Surface, dean of the University of Kansas School of Business, has been director of the program since its inception. The program featured four weeks of intensive training on the campus and here is what Richard Lashley, assistant director, said about it on the presentation of certificates on August 5th:

> In all but a couple of cases, these men were sent here by their companies because their companies have faith in the men and believe that they are capable of assuming greater responsibilities in their companies in the future. The program was designed to help them prepare for such future responsibilities. The two exceptions are those men who sent

themselves; each is the president of his own company.

Although four weeks may seem to be a long time to be away from one's home and family, it certainly is not a long time to devote to studying. Four weeks is hardly enough time to get started in the areas we concentrate on here. We do not attempt to make an expert of anyone in any area in this short period of time. What we do try to do is to present some new ideas to you, create the opportunity for you to exchange ideas among yourselves, urge you to challenge and test such new ideas, introduce you to some of the problems of management which might lay outside the areas you are familiar with, stimulate you to think deeply about such problems, and, above all, create in you the desire and determination to pursue further through self-study the knowledge, understanding, and ability you will need to meet the responsibilities that lie before you in the future in your company.

THE case method of instruction was used extensively. This requires the individual first to analyze an actual business problem and then to test his ideas about the case against those of his colleagues and the instructor. Out of this steady diet of case problem analysis and discussion, the individual can expect real improvement in his ability to analyze business problems, make better decisions, and to communicate more effectively with business associates.

The principal speaker at the "graduating exercises" was William C. Henry, president and general manager of Northern Ohio Telephone Company of Bellevue, Ohio, and a director of the USITA. He discussed the responsibilities of management in the light of tomorrow's opportunities and challenges. "Good management," Mr. Henry emphasized, "is the process of making decisions that keep the best interests of customers, employees, the community, and the owners in their proper balance."

Speaking of the telephone industry, Mr. Henry commented: "Our communications system is regarded as an outstanding business achievement, representing the best of free enterprise in America. It represents the work of many telephone people during nearly a century of industrial growth in this country. Today we find ourselves operating in a new kind of business climate." As to the future challenges within the industry, he said: "The Number 1 endeavor of the industry is providing our customers with a high quality of communications service."

In congratulating the participants for their achievement in completing the program, Mr. Henry said:

> The thirst for more knowledge is one of the motivating reasons for your presence here and why you have applied yourself so industriously during these past four weeks. Self-improvement is a never-ending necessity if we are to acquire incentive and inspiration to do a better job.

FOLLOWING the presentation of certificates of completion by Chancellor W. Wescoe, of the University of Kansas, a reception was held for the graduates and their guests, among whom were families of a number of the participants, members and directors of the USITA, and members of several state telephone associations. Included were Kenneth L. Dally of Lincoln, Nebraska; J. K. Galloway of Winter Park, Florida; Adam J. Schwartz of Rochester, New York; and Robert J. Fegan, of Junction City, Kansas, and members of the personnel committee of the USITA.

Long-distance Communication Via Satellites

THE success of the National Aeronautics and Space Administration's project Echo I, along with other experimental work of the Defense Department in the same field, gives ground for hope that within "our time" and perhaps before very long now we may see international and other long-distance communications making use of artificial satellites orbiting around the world. A great many questions of scientific nature must first be solved; and this indeed is the purpose of the government programs referred to above. Once the technical questions are satisfactorily solved, a new array of economic and political questions must be faced before commercial use of satellites can become a reality.

The first concrete recommendation of the use of artificial earth satellites as communications links was made in 1955 by John R. Pierce of Bell Telephone Laboratories. The latter (BTL) is cooperating with NASA in project Echo. As background for this NASA states:

> One of the primary missions of the national space program is to develop the necessary technology to enable scientists to channel the knowledge they are gaining about space and space vehicles into areas directly benefiting mankind. One of the "practical applications" of space research is in the field of communications.
>
> During the last few years, it has been increasingly apparent that communications lines were becoming overcrowded. Telephone and telegraph lines are barely able to keep up with demand. Future demands on transoceanic telephone cables which are already under a heavy burden will continue to grow. World-wide TV transmission is still not a reality.

Although scientists aren't predicting the end of the telephone and TV transmission as we know it today, they do think that earth satellites will some day provide a much greater capability for global communications. Experimentation in this direction will one day lead to world-wide TV, for instance. In the years to come, communications satellites might also serve as relay stations for messages to and from space vehicles.

NASA's communications program is directed toward ascertaining the optimum systems for various applications and the technology from which such systems can be engineered. Project Echo I, the first experiment in this program, made use of a passive reflector communications system, in which radio signals, including voice modulated signals, were bounced from one point on earth to another via a satellite or satellites.

Two broad categories of satellites may be used to provide communications over large areas of the earth: passive satellites and active repeater satellites. The former may be likened to a radio "mirror," being simply reflectors. The latter contain electronic equipment and a power source to permit a radio signal from the earth to be received, amplified, and retransmitted to a distant receiver.

While NASA, as mentioned, is concentrating on passive satellites, the Defense Department, because of tactical needs, has a program to develop certain forms of the active repeater communications satellite. NASA is trying to establish the technology necessary to the design of the more general communications satellites for civilian and commercial use. Specifically, it is working on large, spher-

ical balloon satellites, such as those first tested in 1959.

Although project Echo was directed by NASA, independent researchers in the communications field were invited by NASA to engage in experiments of their own. NASA anticipated that its 100-foot sphere would become a laboratory tool for the whole world. NASA therefore undertook to supply all interested experimenters in the performance of their own experiments by supplying tracking data.

THOSE who accepted the invitation and volunteered participation in various project Echo experiments include:

US Army Signal Corps, Ft. Monmouth, New Jersey
USAF Research Air Development Command
Alpha Corporation and Collins Radio, Dallas, Texas
Avco/Crossley, Evendale, Ohio
General Electric Company, Schenectady, New York
Haverford College, Haverford, Pennsylvania
IT&T Laboratory, Nutley, New Jersey
Philco Corporation, Rome, New York
Development Engineering Corporation, Annapolis, Maryland
Stanford Research Institute, Menlo Park, California
Jodrell Bank Radiotelescope, University of Manchester, Manchester, England.

The two primary stations taking part in the project Echo communications experiment were Bell Telephone Laboratories' facility at Holmdel, New Jersey, and the NASA-Jet Propulsion Laboratory's Goldstone station in California. The experiment involved bouncing radio signals between those two stations via the orbiting satellite. Goldstone equipment includes two 85-foot-diameter paraboloid antennas—one a receiver and the other a transmitter employing a 2,390 mc/s signal. Holmdel transmits on a 960 mc/s frequency, using a 60-foot dish; and it receives with a special horn-reflector antenna, shaped like a steam shovel's scoop to cut down radio noise interference.

Essential to the project Echo experiment were the orbital calculations, responsibility for which rested with the NASA Goddard Space Flight Computing Center. The orbital data were needed to "position" the receiving and transmitting equipment. The transmitting antenna on one coast was "slaved" to the receiving antenna on the other coast, so that the satellite would be "illuminated" by radio waves, NASA explained. An optical boresight system, usable when visibility conditions exist, aided the trackers in satellite "acquisition." Transmitted power averaged about 10 kilowatts.

IN preparing project Echo NASA stated: The time of mutual visibility between the East and West coasts for any one pass of the sphere is not expected to exceed sixteen minutes. It was estimated that, to obtain intelligible communication, the satellite must be no farther than 3,000 miles from either ground station. Since the satellite was expected to be in continuous sunlight for about two weeks and then in the earth's shadow, one important feature of the inquiry was to establish the effect of the resultant wide temperature changes on the gas within the big balloon. While in the earth's shadow, the gases in the sphere will solidify. One "unknown" is the adverse effect on the sphere of punctures from micrometiorites encountered in orbit. These punctures, scientists expect, will limit the usable life

of the sphere to perhaps two weeks.

Even though project Echo has proved a communications success, it constitutes only a first step in achieving a usable communications system in space. Dr. Morris Tepper, chief of NASA's Meteorological Satellite Program, explains:

> Even though with a single satellite, communications can be established between any two stations within a rather large area, as the satellite moves relative to the earth its area of coverage moves with it. If continuous communication is to be maintained a number of satellites will have to be in orbit so that at least one is always in sight of the two stations desiring to communicate. It would take on the order of 26 spheres in a 3-4000-mile orbit to provide 99 per cent availability, if the spheres were randomly spaced. Because of this requirement and the advent of larger boosters in the coming years, the follow-on program to project Echo calls for the development of the ability to place a number of spherical satellites in orbit with a single booster vehicle.

THAT a long series of experiments still lies ahead was revealed in congressional hearings early this year by Dr. Abe Silverstein, NASA's director of space flight programs. He testified:

> We expect to make a number of such launches to develop the techniques and technologies in this area. We have already made two nonorbital launchings of the spheres from Wallops Island, Virginia, to evaluate such technical considerations as its separation and inflation.
>
> I should like to caution you that neither the meteorological nor communications experiments in the next several years should be considered as an early approach to an operational system. These are experiments aimed at furthering the science and technology in these areas.

THE questions awaiting solution in the technological area before long-distance communications becomes commercially feasible are formidable. Nor are all the questions technical. Will such a worldwide communications system be economic? Will it be politically feasible? After the scientists finish their assignment, what are the next steps? Here, all we can do is ask questions.

If communications satellites are to be used in the communications business between nations, intergovernmental agreements will be necessary. There must be agreements on the frequencies to be used and their allocation. There must be decisions on financing the putting of sufficient spheres or other satellites into orbit and replacing in orbit those which disappear. A decision must be made as to how or whether the users will pay for the facilities.

Terminal equipment is rather expensive, involving powerful transmitters and large antennas. In communicating with the other side of the earth two to four intermediate receiving and transmitting plants probably would be needed, since such communication is limited to line of sight. NASA does not have the answers to the many problems involved in such an international system of communication. It does not even know all the problems.

As for frequencies to be used, probably these will be in a band quite different from that now employed in communications; *i.e.*, UHF and SHF.

—HERBERT BRATTER,
Washington, D. C.

The March of Events

Over $5 Million in REA Bond Purchases

MORE than $5 million worth of 2 per cent REA Treasury bonds have been purchased by REA electric and telephone system co-ops financed by the Rural Electrification Administration, the U. S. Department of Agriculture has announced.

Between July 1st, when the bonds went on sale, and September 19th it had received bond purchase orders from its borrowers totaling $5,159,000.

Largest single transaction to date was the purchase of a $300,000 bond by the Flint Electric Membership Corporation of Reynolds, Georgia.

The bonds are available only to REA borrowers, earn interest at same rate borrowers pay REA on their loans, have a maturity of twelve years. Holders, however, may redeem their bonds from the Treasury, in whole or part, on thirty to sixty days' notice.

Competitive Nuclear Power Soon

IN a press interview September 20th, Dr. Robert E. Wilson, one of the newer members of the Atomic Energy Commission, predicted that by 1968 nuclear power would be competitive with other power fuels. He said, "We think that by 1968 nuclear power in large units (300,000 kilowatts and up) in high cost areas will be competitive with other power fuels—coal, gas, and oil."

Dr. Wilson, however, expressed doubt that atomic energy would replace present means of making electric power, especially in the Ohio valley, because of its large coal-producing reserves, in the foreseeable future. Wilson is a retired industrialist, scientist, engineer, and inventor. He formerly was a member of the AEC statutory general advisory committee which advises the commission on scientific and technical matters.

California

Gas Exploration Subsidiary

A NEW subsidiary has been formed by Pacific Lighting Corporation to develop natural gas reserves—principally in the mid-continent and the Rocky Mountains. Robert W. Miller, chairman of the board of Pacific Lighting Corporation, said the new company, Pacific Natural Gas Exploration Company, will explore jointly for gas reserves with a subsidiary of Southern Union Gas Company of Dallas, Texas. He said the present project is lim-

ited in scope and experimental in nature. It will provide only a small part of Pacific Lighting's future requirements for gas, he said. But it is a step towards having available gas reserves for use in later years to supplement the gas to be bought from El Paso Natural Gas Company and Transwestern Pipeline Company.

Southern Union Production Company will supply the bulk of man power and technical services. Pacific Lighting will own about half of all gas developed and one-fourth of all oil found. It will also enjoy the right to buy any part of Southern Union Production's half of the gas production which will not be required by that company's parent, Southern Union Gas Company.

Florida

Gas Pact to Raise Rates

THE end of a two-year franchise battle between Miami commissioners and the Houston Gas Corporation will mean a 3 per cent boost in the bills of 18,000 Miami, Florida, customers.

The increase stems from a franchise tax Miami would assess against Houston Gas as it does against other utilities. The gas company, in turn, would pass the tax along to consumers. Customers would have to pay $89,000 in retroactive taxes—or about $5 per family—over a five-year period.

A customer whose bill is now $5 would pay an increase of about 23 cents a month —15 cents for the 3 per cent tax and 8 cents for payment on the retroactive tax.

However, the agreement must still win the approval of the Florida Railroad and Public Utilities Commission which is studying complaints that Houston's rates in the city are already too high. Also, city voters will have to vote on the franchise this November before it becomes official.

Illinois

Will Build Atom-proof Phone Center

THE state will see the start of the construction this fall of a fallout-proof phone switching center near Norway, Illinois.

The station will protect nation-wide phone service in the event of a nuclear attack or other major disaster.

Illinois Bell Telephone Company and American Telephone and Telegraph Company issued a joint announcement of the project which they described as one that will cost $24 million and a major link in the nation's telephone switching network.

The switching center will contain long-distance switching and other communications equipment and will employ about 100 persons. It will be one of the largest phone switching centers ever built, company spokesmen said.

The center will have its own water supply, emergency power, and fuel, as well as a filtered air-conditioning system. It could be operated on a self-contained basis for twenty-one days.

Indiana

Investor-owned Utility Wins

IN a hotly contested battle over whether the city of Knox, Indiana, should have a municipally owned and operated gas plant or grant a franchise to Northern Indiana Public Service Company, the utility won out 812 to 233—a 4-to-1 margin.

The city gave Northern Indiana a 50-year franchise after this clear mandate from the voters that it preferred investor-owned utilities to municipally owned.

Largely responsible for the success of NIPSCO was the public survey it made which revealed a 2-to-1 opinion in its favor.

It also disclosed that the company was highly regarded in the community, with two-thirds of the residents satisfied with NIPSCO's electric rates.

After an intensive publicity campaign, NIPSCO stepped up its effort as election day drew near. It told the voters why private enterprise could do a better job of supplying the citizens of Knox with natural gas. Largest number of voters ever to turn out for an election went to the polls and cast their vote on this utility issue. After a decisive vote in favor of NIPSCO a public hearing was held at which the city council voted 3 to 2 to grant the company a gas franchise.

Louisiana

Gas Rate Fight

UNITED GAS PIPE LINE COMPANY is after authority for a new rate schedule covering sales for resale of natural gas to distributors in its New Orleans zone. Opposed to the rate hike are a group of 53 industrialist gas consumers in Orleans parish.

Also opposed are the city of New Orleans, New Orleans Public Service, Inc., Louisiana Gas Service Company and Harold Kytle, representing the Jefferson parish waterworks.

Chairman of the committee representing the gas consumers said the proposed rate boosts would not only extraordinarily increase the cost of operation of the consumers he was speaking for but would also discourage new industries that use large amounts of gas from moving into New Orleans.

Attorney for United Gas said that not only would the company like a rate boost in the present case, but it would like a review of a previous ruling by the commission. Commission Chairman McKeithern said it was his thought that a supreme court ruling on the appealed case would be rendered before the present one was completed. In that case, he said, "we will be guided by the supreme court case."

New Jersey

$10 Million Rate Rise OK'd

THE state board of public utility commissioners has ruled that Public Service Electric & Gas Company can charge new rates that will increase its revenue $10 million a year. This amounts to a 3 per cent boost. For the average customer it means a 2.68 per cent increase for gas and a 2.78 per cent hike for electricity, according to Ralph L. Fusco, president of the board. The new rates were scheduled to go into effect October 3rd.

Actually, the new rates for gas users will be only 1 per cent inasmuch as they have been paying higher rates under a temporary order which approved an increase in January, 1959.

Public Service had requested a $15 million rate increase from gas users in April, 1958. Seven months later the concern also requested an increase of $21.4 million from electricity users. Both requests were shaved down during the intervening two years to the $10 million approved by the board. About 2.5 million Public Service customers, including both gas and electric, will share the new rate increase.

New York

Asks 6 Per Cent Rate Increase

THE New York Public Service Commission has been asked by Niagra Mohawk Power Corporation for permission to increase its electric rates 6 per cent over present charges. The new rates would apply to more than one million residential, farm, commercial, and industrial customers. It would boost the company's total annual electric revenues about $11.2 million before taxes.

The increase would be distributed among ratepayers as follows: residential and farm customers, $4,932,000; commercial customers, $2,352,000; industrial concerns, $3,938,000.

Rhode Island

Service Restoration Report OK'd

THE state public utility administrator stated that he believed the Narragansett Electric Company "did the best they could" in restoring service after hurricane Donna.

George W. Michael made the comment in connection with the release of a report made by the utility to the state.

The company's handling of service restoration was widely criticized by the public as being late and not an all-out effort.

Narragansett estimated its costs resulting from the hurricane as being more than $250,000 in overtime pay, hiring of outside help, costs of material and equipment, and lost revenue.

In response to numerous requests that the utility should try to put a subtantial number of its feeder lines in the metropolitan area underground, Michael pointed out that it would be necessary for the utility to increase its rate three to four times.

One reason for some delay in restoring service was the policy of not sending current through main distribution circuits until they were completely cleared so that workmen would not have to work with hot wires.

Texas

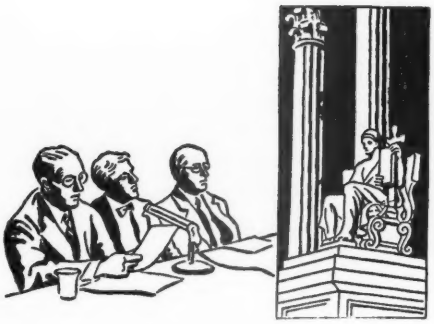
Big Gas Expansion Planned

TEXAS EASTERN TRANSMISSION CORPORATION of Houston is planning to add about 150 million cubic feet of gas daily to its delivery capacity, according to the company's financial vice president, James W. Hargrove.

In an address to the Cleveland Society of Security Analysts, he said the additional gas would go to customers presently being served by Texas Eastern. The increase will be obtained in two increments with 75 million cubic feet being added in 1961 and the remainder in 1962, subject to the Federal Power Commission's approval.

Cost of the expansion program will run about $70 million.

Texas Eastern also has another program before the FPC which calls for the addition of 50 million cubic feet a day. This one is expected to cost $17 million and FPC approval should be forthcoming before the winter heating season. Texas Eastern reported that total cost of the two gas expansion projects, plus development of the Leidy underground storage facility, will be more than $125 million.



Progress of Regulation

Trends and Topics

Use of Trended Original Cost in Fixing a Rate Base

EVIDENCE of trended original cost in determining a rate base has been accepted by some commissions and rejected by others. Acceptance or rejection may depend upon the fundamental question whether the commission approves a fair value rate base or a cost rate base, or it may depend upon the question whether the evidence as presented is satisfactory. This subject is discussed in PUBLIC UTILITIES FORTNIGHTLY, page 273 (February 14, 1957), but several subsequent rulings deserve consideration.

Objection to Price Indexes and Inflation of Debt Dollars

The Kansas commission used original cost less depreciation, taken directly from the books, in determining a rate base for Southwestern Bell Telephone Company. It said that this would eliminate the speculation and individual judgments inherent in reproduction cost and trended original cost. The company had introduced testimony as to the value on July 1, 1959, determined by the application of three price indices to net plant in service accumulated since 1915. It applied price indices to the historical dollars to restate them in current terms. The company used the consumer price index, the wholesale price index, and the gross national product deflator.

Objection was made by the commission staff that use of these indices was inappropriate because the commission should determine the cost of the investment and not consider what a "sample of persons are paying for current living expenses." On cross-examination a witness admitted that there was no direct connection between the wholesale index and the cost of construction of telephone plant.

The commission said that a fallacy in the company's exhibit was that it failed to take into consideration the fact that a substantial portion of the dollars invested was what is known as "debt dollars," which investment was paid by the company in dollars not subject to the present effects of inflation. Moreover, trending cost of plant without trending depreciation reserve, the commission said, leads to an erroneous conclusion.

On the question of debt dollars the commission said that no sound reasons had been presented why a rate of return of 7 per cent should be allowed investors on the remaining depreciated plant which had been put in service prior to 1916. The commission said that the company's theory lacked definiteness and stability and was conjectural, speculative, and unrealistic (34 PUR3d 257).

Objections by Other Commissions

The Delaware commission, criticizing both reproduction cost and trended cost, says the fact that presently existing plant would not be reproduced in its existing state is an inherent weakness (21 PUR3d 417; 28 PUR3d 121, 128). The Rhode Island administrator criticized trended costs because this theory assumes the piecemeal reproduction of existing property at high current prices although technological improvements would bar such construction (21 PUR3d 113).

The Oregon commissioner rejected trended original cost as speculative, unreliable, unrealistic, and indefinite (32 PUR3d 497; 34 PUR3d 36). A similar view was taken by the Idaho commission, which noted that it disregards age of equipment, operating efficiency, and whether or not such equipment would be installed under modern-day conditions and prices (33 PUR3d 88). The Washington commission expressed the same opinion (33 PUR3d 468).

Acceptance of Trended Costs

The Pennsylvania commission, with the approval of the state courts, has accepted evidence of trended original cost in several cases, although, in fixing rates for General Telephone Company of Pennsylvania, the commission criticized the method followed in applying indexes to some categories of central office equipment (28 PUR3d 413). The commission says that this is an acceptable measure of value when properly derived, and it has approved the use of Handy-Whitman indexes. It rejected contentions that a trended original cost estimate should be discounted for supersession, defined as the "phenomenon constantly taking place of the adoption of new products and new methods of construction." A direct discount, said the commission, would be in direct conflict with the very purpose of trending (33 PUR3d 177).

Trended original cost has been termed by a Pennsylvania court an acceptable substitute for reproduction cost (25 PUR3d 273). The commission has called trended original cost more credible evidence than reproduction cost since it can reasonably be based upon facts (14 PUR3d 438).

The Iowa supreme court said that fair value can be determined by the use of original cost figures and price indices. This method also furnishes a comparison with reproduction cost figures. The court said that this method "has been growing in use and acceptance" (20 PUR3d 159).

The Illinois commission, in the Iowa-Illinois Gas & Electric Company case, used both reproduction cost and trended cost figures (26 PUR3d 369), and its order was upheld by the state supreme court (34 PUR3d 228).

The Montana commission says that trended original cost deserves the same measure of reliability as reproduction cost, although the computation is different. A company had submitted evidence of original cost, original cost less depreciation, and trended original cost depreciated. The company used the Handy-Whitman Index of Public Utility Construction Costs, which had been "long recognized as an authoritative publication on cost trends" (29 PUR3d 237).

Review of Current Cases

Refunds Required on Joint Toll Service Under 1956 Rate Reduction Order

To the extent that it has not already done so, Southern Bell Telephone & Telegraph Company was ordered by the Louisiana commission to refund for the period September 1, 1956, to May 5, 1960, 20 per cent of all joint intrastate toll rates and charges collected by independent connecting companies for the use of Southern Bell facilities in handling messages originating in connecting company exchanges.

By a rate reduction order to Southern Bell in 1956, the commission provided that "effective September 1, 1956, all intrastate toll rates and charges shall be subject to a discount of 20 per cent per call." Southern Bell duly responded to this order except that it made no refunds and no reduction on its portion of toll calls jointly handled with independent companies, where such calls originated at the latter's stations.

In the instant show-cause proceeding, Southern Bell alleged that toll rates as to which refunds have not been made were rates not collected from subscribers or customers of Southern Bell and that Southern Bell had no way of reducing such rates since they were collected by independent connecting companies. It was contended that since the commission has not previously fixed joint rates and charges for Southern Bell and independent connecting companies, for the commission now to order reduction of even Southern Bell's portion of such rates would be tantamount to fixing joint rates without having afforded affected parties a hearing on the issues. The company also argued that the division of such toll rates under traffic contracts with independent connecting companies did not constitute joint rates and charges but was the result of private contractual arrangement protected by constitutional provision.

Rate Reduction Covers Tolls

The commission found that Southern Bell and the independents charge for interchanged message toll traffic on the basis of tariffs on file with the commission. The share of each participant in such tariff rates is based on settlement provisions contained in traffic agreements. Southern Bell has made refunds on intrastate toll messages utilizing joint facilities where messages originated in a Southern Bell exchange as "sent paid" messages or terminated as "received collect" messages, but that no refunds have been made on intrastate toll messages originating in an exchange of an independent connecting company on a "sent paid" basis or terminating there on a "received collect" basis.

A lower, discriminatory rate has been exacted in the one case than in the other, the commission observed.

The commission held that its original order directing a 20 per cent discount per call includes the Southern Bell portion of intrastate toll rates and charges shared with independent connecting companies, whether such toll rates are collected by Southern Bell on "sent paid" or "received collect" messages or whether they are collected by independent connecting companies under traffic agreements. *Louisiana Pub. Service Commission v. Southern Bell Teleph. & Teleg. Co. Order No. 8190, Docket No. 7422, August 8, 1960.*

High-debt Ratio Considered in Fixing Telephone Rates

A RATE increase calculated to yield a return of 3.8 per cent on a net investment cost rate base was granted to the Spring Valley Telephone Company by the Wisconsin commission. The company had been operating at a loss. The company, with the proceeds of a $227,000 loan obtained from the Rural Electrification Administration, had extended and rebuilt its telephone property.

Recently the system was converted to dial operation.

Service was provided to 501 customers located in the village of Spring Valley and its environs. At dial conversion, extended-area service was provided to two other communities. The rate increase was requested because of the substantial increase in investment in property and plant due to the dial conversion.

The rate of return of 3.8 per cent which will be earned under the authorized rates will provide the company with $4,032 on its $17,206 of common stock equity. This will amount to 23.43 per cent on such equity. This high rate of return results because of the high ratio of debt ($227,000) at a low rate of interest (2 per cent) as compared with the equity of $17,206. For this reason the return of 3.8 per cent on a rate base of $216,969 was deemed reasonable and just.

The rate increase was made subject, however, to the condition that no cash dividends be declared and paid on common stock at a rate exceeding 6 per cent annually of the par value of common stock outstanding at the time of payment of the dividend. The order provided that this condition shall remain in effect until the company's common stock equity is equal to 40 per cent of total capitalization. *Re Spring Valley Teleph. Co., Inc. 2-U-5377, July 20, 1960.*

Rates Fixed for Small Telephone Company Without Apportionment between States

A SMALL telephone company was unable to offer satisfactory support for a requested rate increase which the Wisconsin commission determined, after making necessary adjustments, would result in a rate of return of 11.3 per cent on a net book value rate base. A sufficient increase was allowed, however, to cover a projected deficit and afford a return of 6.5 per cent. In arriving at rates to apply to Wisconsin subscribers, the commission considered total company operations, including a portion in Illinois. If a separation of operations between the states were available, it was noted, the findings in this case would probably not be different because the Illinois service is a relatively small proportion of the total operations.

Repair materials were estimated on the basis of $1.30 per main station a year. Other maintenance expense was computed by using the 1959 ratio of this expense item to repair labor and applying this ratio to pro forma repair labor. The cost of outside accounting service was excluded from the general expense claim since the amount claimed for general office salaries was sufficient to employ a full-time bookkeeper and provide for general supervision of the telephone utility's operations.

In computing pro forma revenues, the commission assumed a specific growth factor based on the applicant's testimony. *Re Sharon Teleph. Co. 2-U-5362, August 26, 1960.*

Four Per Cent Return Allowed on Current Value

THE Nebraska commission rejected as excessive a request by Cuming County Independent Telephone Company for a rate increase which would result in a rate of return of 6.06 per cent on a current value rate base.

The company serves approximately 1,720 customers.

Current value was based on reconstruction cost at current price levels. With a rate base of about $347,000, $6,361 was allowed for cash working capital, based on one-twelfth of annual operating expenses, including taxes and interest, less depreciation.

It was found that an increase in annual operating revenues of nearly $19,000 would produce a net profit, before interest and dividends, amounting to 4 per cent on the rate base. This was considered fair and reasonable, and the application was, therefore, granted to this extent. *Re Cuming County Independent Teleph. Co. Application No. 22289, August 10, 1960.*

Security Issues to Reimburse Telephone Company Treasury For Capital Expenditures

NEW YORK TELEPHONE COMPANY has obtained the approval of the New York commission to sell $180 million of new securities. Six million shares of common stock with a par value of $20 per share will be sold to American Telephone and Telegraph Company, and $60 million principal amount of refunding mortgage bonds will be offered for competitive bidding.

The proceeds from these securities will be applied toward the reimbursement of New York Telephone's treasury for sums already expended for capital purposes. The reimbursement funds will be used to repay short-term bank notes.

The commission noted that the proposed security issues in the ratio of one-third mortgage bonds to two-thirds common stock are consistent with the telephone company's prior financing proceedings.

These issues will reduce the debt ratio from 36 per cent to 31 per cent, closely approximating the average year-end ratio of 30 per cent for the company during the period from 1920 through 1957. The commission noted that its approval of security issues in a financing proceeding is not controlling for rate purposes. *Re New York Teleph. Co. Case 21363, September 13, 1960.*

Excess Return Absorbs Part of Increased Telephone Company Expenses

In view of a current rate of return of 9.13 per cent to the Independence Telephone Company, the Wisconsin commission declined to allow all of a requested rate increase designed to cover several expense increases and add a small amount to net operating income. The excess return would absorb a portion of these increases.

Besides pointing to wage and tax increases, the company claimed an additional expense for tree trimming and clearing of right of way preparatory to conversion to dial service. These items were recognized as operating expenses. A small increase in operating income resulted from a revision of a compensation schedule for the interchange of toll revenues.

The commission allowed a sufficient rate increase to afford a rate of return of 6.5 per cent on a net book value rate base. *Re Independence Teleph. Co. 2-U-5400, August 30, 1960.*

Statute Validating Discriminatory Agreements Is Unconstitutional

The North Carolina supreme court has held unconstitutional a statute which validated franchise agreements between telephone companies and municipalities. The statute had reference to agreements which granted concession rates to municipalities in return for the right to lay and maintain poles in the city streets.

It had been contended that the franchise agreements did not fall within the purview of commission jurisdiction. The court disagreed. The commission has jurisdiction over discriminatory rates, and the practice of rendering service to municipalities either free or at a reduced rate is discriminatory. A fundamental basis for the regulation of utilities, noted the court, is to assure that once monopoly powers have been granted, the utility will provide all of its customers similarly situated with service on a reasonably equal basis. Having determined that discrimination existed, the commission was under a statutory duty to fix just and reasonable rates.

The commission had properly concluded that the requirement of free or reduced rate service by the municipalities as a condition precedent to the granting of franchises amounted to an illegal tax. A statute could not validate agreements which offended the due process provisions of both the state and federal constitutions, did not impose a uniform tax, interfered with vested rights, and attempted to surrender the police power of the state. *North Carolina ex rel. North Carolina Utilities Commission v. City of Wilson et al. 114 SE2d 786.*

Interim Telephone Rate Increase Granted Pending Investigation

Door County Telephone Company, which was operating at a loss, was granted an interim rate increase by the Wisconsin commission pending further investigation. The interim rates would provide $32,820 of additional annual revenue and a rate of return of 6.15 per cent on a rate base of $328,624. The rate

base, rate of return, and rates for service were considered reasonable and just. The commission said that the case would be reopened for further consideration and hearing if deemed necessary as soon as the company submits data as to the actual results of operation for the year ending June 30, 1961.

The company's common stock has been recently purchased by General Telephone & Electronics Corporation, which is also the owner of the common stock of General Telephone Company of Wisconsin. With this affiliation, the company's property has been operated as though it were part of General Telephone Company of Wisconsin.

The new ownership considered a rate increase necessary because of a proposed substantial increase in operating expenses and a desire to earn a fair rate of return on a proposed large increase in investment. This increased investment was deemed necessary in order to upgrade the service of present customers and to build plant necessary to serve new customers. Among the larger items included in the increase in plant in service was the proposed establishment in 1961 of a new dial central office in one of the cities served by the company, the enlargement of present central offices, and extensive construction of additional cable and wire plant.

The commission considered that it would be unfair to ratepayers to establish rates for service in July, 1960, based upon a level of operations as of June 30, 1961. It pointed out that the present investment in plant in service and the level of revenues and expenses were materially different from what they were expected to be next year. The commission said that when the maintenance of the property has increased to the standard proposed and the investment in plant has reached the level expected, it will then have actual facts to rely upon in determining whether proposed rates are reasonable and just. In view of these considerations, and of the fact that the company would be operating at a deficit under existing rates, the interim rate increase was granted. *Re Door County Teleph. Co. of Wisconsin, 2-U-5356, July 15, 1960.*

Legislative Mandate as to Rates Binds Commission

THE Maine commission, in a decision upon remand of a water district rate case, granted a rate increase it had previously denied the Auburn Water District.

The court had ruled on two distinct issues of law. The first issue concerned itself with the determination as to whether or not the district's charter contained a maximum rate limitation on charges for service to municipalities which prohibited commission rate regulation in perpetuity. The commission, in its original decision, had denied the rate request, deciding that the municipal rate provision was subject to its regulation in effecting its primary duty of setting just and reasonable rates. The court had pointed out that the legislature, by the charter provision, had specifically exempted from commission regulation and control the charges for service to municipalities.

Extinguishment of Bonded Indebtedness

The second legal issue upon which the commission had premised its denial of the rate increase, was that the annual appropriation proposed by the district for extinguishment of its bonded indebtedness was not equitably related to the service life of the property for which the bonds were to be issued, and, as a result,

discrimination would occur between present and future ratepayers. The charter contained provisions for a maximum limit of thirty years for extinguishment of the district's bond issues.

The commission had found as a fact and ruled that the proposed program for retiring the bond issue was discriminatory. The court had indicated that the legislature had specifically provided limitations on the life of bonded indebtedness which absolutely had to be followed by the commission in its function of setting just and reasonable rates. The commission now stated that legislative action alone could effect appropriate provisions which would remove any discrimination imposed through rigidly fixed maximum rate limitations.

Fixture Billing Expedited

The district's current practice was to give no consideration in its flat billing for additional fixtures. The commission directed the district to expedite its program of completely metering the system in order to remove any possible inequity due to nonbilling for additional fixtures.

The district also followed the practice of not charging for private fire protection services, contending that customers were required to provide the complete installation at their own expense, that in some cases adequate pressure was not being provided and the district did not in any case guarantee adequate pressure for private fire protection, and that it was in the public interest to have as many of such services as possible. In addition, the district claimed computation of any charge for such services would be extremely difficult.

The commission's position was that with the exception of the first contention, none of the other arguments presented sufficient basis for permitting a free service, which automatically imposed extra payment on others and was contrary to the provisions of law regarding unlawful discrimination. The commission did not believe that the present practice of the district was so inequitable as to require immediate revision. However, further studies were directed to be made in order to insure that no substantial inequities developed. *Re Auburn Water Dist. F. C. No. 1607, August 10, 1960.*

Attrition, Capital Cost, Rate Base Items, and Expenses Considered in Rate Case

THE New Jersey commission granted a $10,163,000 rate increase to Public Service Electric & Gas Company. The company had proposed rates which would increase annual revenues by $37,498,709. In granting the increase the commission adopted 6.25 per cent as a fair rate of return and said that the company was entitled to an increase in operating income of $4,268,500, to which must be added a state franchise tax of 5 per cent, or $467,500, the tax in lieu of personal property tax of 7½ per cent, or $762,200, as well as the federal income tax of 52 per cent, or $4,664,800.

Cost of Capital

In developing an estimate of a fair rate of return, three witnesses proceeded by first preparing an estimate of the cost of capital. The company's witness adopted a dual approach in his calculations of the cost of common stock equity. One approach was to study the earnings-price ratios of other large combination utilities and of the petitioning company for a ten-year period. This study indicated an earnings-price ratio of 7.7 per cent for other large combination companies and 8.2 per cent for the petitioner. To provide an

allowance for financing cost and pressure this witness increased these percentages by 10 per cent.

His other approach was to calculate the actual cost of common stock offerings for a ten-year period, again comparing other large combination utilities and the petitioner. This study indicated an average cost of 8.7 per cent for the comparison companies and 7.6 per cent for the petitioner. He attributed the lower cost to the petitioner to investor anticipation of higher future earnings. He concluded that the present-day cost of attracting common stock capital for the petitioner was 9.5 per cent.

Another witness developed the common stock equity cost from a study of dividend-price ratios for the company. He concluded that the appropriate dividend-price ratio was 6 per cent and, assuming a pay-out ratio of 72.5 per cent, which was the average for ten large combination utilities which he used in his study, he calculated an earnings-price ratio of 8.28 per cent. He increased this ratio by 7 per cent to cover cost of financing and pressure, resulting in a common stock equity of 8.86 per cent.

The third witness developed equity cost in a similar manner in that such costs were developed on the basis of dividend yields and pay-out ratios.

The commission did not fully accept the conclusions as to cost of capital and rate of return of these witnesses on the ground that there were certain weaknesses in their approach. It believed that the approach followed by the company witness tended to overstate the fair rate of return, while the testimony of the other two witnesses did not fully give consideration to all factors.

The commission held that some recognition should be given to the factor of attrition. The company's plant and facilities are continuously expanding, and, according to the commission, rate making is prospective and prices have continued to rise. It concluded that a rate of return in the range of 6.10 per cent to 6.37 per cent would be fair and reasonable for the purpose of this case. In order to reflect its views on attrition it adopted 6.25 per cent as a fair rate of return.

Rate Base and Operating Charges

The company presented evidence of rate base calculated on an original cost basis, trended original cost, and fair value. The commission conceded that it is required to determine fair value but said that it is not bound to use any single formula or a combination of formulae in arriving at a proper rate base. The determination of fair value, it said, is not controlled by arbitrary rules or formulae but should reflect the reasonable judgment based upon all the relevant facts. Alluding to the weaknesses or infirmities in the trended original cost study, the commission said that it is not dissimilar to a reproduction cost study and subject to defects which have been previously pointed out in other rate cases. The commission deemed it reasonable, proper, and fair to both customers and the company to develop its findings as to rate base on evidence pertaining to historical cost at the end of the year 1959.

Operating Expenses

In considering the company's operating charges the commission disallowed the normalization of the tax reduction of liberalized depreciation under § 167 of the Internal Revenue Code. It also disallowed charitable and educational contributions as an operating charge. Rate case expenses were allowed to be amortized on a five-year basis. *Re Public Service Electric & Gas Co. Docket No. 584-10646, August 12, 1960.*

"Flow-through" Accounting Authorized for Income Taxes under Accelerated Depreciation

THE Colorado commission authorized Public Service Company of Colorado to account by the "flow-through" method for federal income taxes resulting from accelerated depreciation under § 167 of the Internal Revenue Code of 1954, consistent with a recent rate decision (34 PUR3d 186) in which the commission followed the doctrine of "flow through." This doctrine requires that only the federal income taxes actually currently paid be charged as operating revenue deductions and does not permit any "normalization" of such taxes.

Thus, a 1956 order prescribing accounting under the "normalization" method for the results of accelerated depreciation was expressly modified so that only actual federal taxes accrued for the current year may be charged to operating expenses. Under the new order, no amount of reduction in federal taxes resulting from accelerated depreciation shall be charged to the income deduction account "Provision for Deferred Federal Income Taxes," nor shall any corresponding amount be credited to the account "Earned Surplus Restricted for Future Federal Income Taxes." *Re Public Service Co. of Colorado, Application No. 13856, Decision No. 54866, August 12, 1960.*

Increased Costs of Service Recognized in Gas Rate Cases And Sales Promotion Activities Curtailed

IN general rate reviews on applications by Southern California Gas Company and its affiliate, Southern Counties Gas Company of California, the California commission authorized rate increases sufficient to afford each company a rate of return of 6.6 per cent on depreciated original cost. While this discussion deals with the Southern California proceeding in particular, it should be noted that similar rulings were made in the Southern Counties case.

Southern California obtained $17,690,000 of a request for $24,225,000 of additional annual gross revenues related to a test year ending June 30, 1961. Somewhat over $7 million of the increase will offset a price rise in cost of pipeline gas supplies recently put into effect by El Paso Natural Gas Company. However, if Southern California should receive a refund upon final determination of the new pipeline rate by the Federal Power Commission, the refund will be passed along to consumers. Besides citing increased cost of gas supplies, including California-produced gas, in support of the requested additional revenues, the company pointed to higher wages granted to employees, increased tax rates, and higher unit plant costs.

Reduction in Return Allowance

In the last general rate review for Southern California, the commission allowed a rate of return of 6.75 per cent on a depreciated original cost rate base. In the instant proceeding, on a similar rate base of approximately $423 million, 6.6 per cent was found to be reasonable despite the company's contention that 6.75 per cent must be continued if earnings on existing capital are not to be diluted and if new capital to construct facilities to import additional gas supplies is to be obtained on favorable terms.

The applicant's debt ratio was shown to be 47.5 per cent, with 5.5 per cent preferred stock, and 48 per cent common stock equity. Bond capital cost appeared to be 3.94 per cent, and preferred stock cost 6 per cent. The requested rate of return of 6.75 per cent would produce earnings of 10.2 per cent on common stock equity. The applicant compared this level of earnings favorably with other gas companies. Interested agencies of the federal government contended that 6.5 per cent was the upper limit of reasonableness.

The commission indicated that the cost of money is not decisive of the allowable rate of return; the interests of the consumer as well as the investor control the issue. Without a more specific explanation of its determination, but based on "a careful consideration of the evidence," the commission found that a rate of return of 6.6 per cent was reasonable in this case.

Revenues and Expenses Adjusted

In estimating revenues for the test year the commission recognized 1961 contract increases in the cost of California gas. This was not intended, however, as an approval of the contract pricing provisions, for rate-making purposes, except for the test year. The burden of proof of reasonableness of the cost of gas rests upon the applicant and is a continuing responsibility, it was pointed out.

A percentage factor of 0.42 per cent of the estimated firm service revenues for the test year was approved as a reasonable allowance for uncollectibles. A claim for $50,000 for the administration of possible rate refunds in connection with offset rate proceedings was denied in view of conditions imposed in prior decisions in such proceedings.

The commission observed that dues to social clubs, expenditures for political purposes, and, in part, donations to charitable organizations should be excluded from operating expenses. They are properly a charge on the stockholders, not the ratepayers. A proposed trending method in estimating ad valorem taxes for the test year was disapproved in favor of the commission's uniform practice of using the latest known ad valorem tax rates and assessment ratios.

Sales Promotion Costs and Activities

The staff estimated sales promotion expenses at a substantially smaller figure than did the company. The commission noted that it has always recognized the value of advertising and sales promotion by utilities and has allowed reasonable expense claims for these purposes. Southern California contended that its sales promotion activities benefit the ratepayers in two specific ways: First, new customers benefit from the services provided by company sales personnel, and, second, a program to increase the year-round and off-peak loads will improve the utilization of facilities and the annual load factor, which will result in more favorable rates for all customers.

The commission allowed $6.5 million to be charged to the ratepayers for sales promotion activities in the test year. This sum approximated 2.2 per cent of estimated test-year revenues, and amounted to slightly more than was actually spent for that purpose in 1959.

Certain commercial interests complained of a number of practices of the company related to sales promotion and customer relations, in consequence of which the commission determined: (1) that the present house call program of meter, piping, and pilot light inspection should be continued in the interest of safety and continuity of service; (2) that the company should either discontinue the preparation of appliance prospect lists or

make such lists available equally to all gas appliance dealers who sell gas appliances only; (3) that direct sales of appliances to architects, builders, and for apartment house uses should be discontinued; and (4) that company appliances used for display purposes should be considered in connection with the rate-making allowance for sales promotion expenses, not as a part of materials and supplies or other plant.

Spread of Rates

A major issue in this proceeding concerned the spread of rates among the various classes of customers, particularly as between firm and interruptible service. The applicant proposed rates consistent with a "share-the-savings" cost allocation study which it presented, based on a calculation of the cost of two hypothetical independent systems designed to serve the firm and interruptible classes separately.

The commission did not agree with the theoretical assignment of little or no demand costs to the interruptible service, as advocated by some of the parties, in view of the company's actual operations, gas procurement policies, gas sales, and relatively small curtailment of interruptible service. Less than 50 per cent of the gas estimated to be sold in the test year would be for firm service. Both capacity and usage are significant elements in respect to the capital outlay for a pipeline system, said the commission, and they need to be given significant weight in determining the cost of jointly used facilities.

But cost is only one of the important elements in rate making, it was noted. While the proposed rates were well below the costs of alternate fuels for residential and restaurant uses, the advantage as to firm industrial processing customers was decreased or reversed when oil entered into competition. Gas has recently been more expensive than heavy grades of fuel oil used by large industrial customers and steam-electric generating customers. It appeared that Southern California could expect some loss of interruptible load at its proposed higher rates.

In arriving at proper rate levels for the several classes of service, the commission considered "all of the factors inherent in rate spread including cost of service, value of service, and history of rates." *Re Southern California Gas Co. Decision No. 60615, Application No. 41860, August 23, 1960; Re Southern Counties Gas Co. of California, Decision No. 60614, Application No. 41859, August 23, 1960.*

Dissenting Commissioner Opposes Wholesale Rate Changes without Investigation

THE North Carolina commission held that neither a cost-of-service study nor a determination of the rate of return was required for a newly filed electric rate schedule that was just one part of the company's total rate structure, where the company asserted that the rate of return would not be affected by implementation of the schedule. It denied a motion to strike portions of interveners' protests. While the two sections at which the motion had been directed did allege matters somewhat foreign to the matter at issue, pointed out the commission, they did not offer any serious threat to the determination of the real matter in interest. Matters pertaining thereto could well be controlled by allowance or disallowance of testimony offered at the hearing.

Commissioner Eller voiced a strong dissent. There has been a growing trend, the commissioner pointed out, for utilities

to file new schedules, and to modify provisions of such schedules where protests have been made so that the protesting bodies would withdraw. Then, if no further protests are received, the commission allows the new "legal" rate, as differentiated from a "lawful" rate. If protests are received and not withdrawn, the burden of proof then falls upon the protestants.

The dissenting commissioner did not see how a utility customer could conclude other than that the commission had by default approved the rate charged. What is important to the customer, the commissioner said, is that the commission is permitting the company to charge a rate without notification, without investigation, without hearing, without determination of reasonableness, and without hope of refund or judicial review. It made no practical difference either to the company or to the person whether the commission called the rate "lawful" or "legal."

The legislature had long ago recognized that many customers were not equipped, financially or otherwise, to act as a full adversary party in proceedings involving utility rates. It had meant for the commission to shoulder some of that burden in the public interest. That was the basic principle in the theory of utility regulation.

The burden of proof, the commissioner went on to say, is the key to the machinery of protest. It is essentially what distinguishes the "protestant" from the "complainant." Place such a burden on the protestant and his rights would be severely prejudiced. *Re Carolina Power & Light Co. Docket No. E-2, Sub 72, August 31, 1960.*

Customer Advances, Incomplete Construction, And Property for Future Use Excluded

THE Connecticut commission granted a water company a modified rate increase which would produce a return of 6.17 per cent on the original cost depreciation rate base. The commission excluded, from the rate base, incomplete and contemplated construction, customer advances, and property held for future use.

The commission pointed out that the statutory authority under which it exercised jurisdiction did not permit it to provide a return on property which the owner contemplated would be dedicated to public service at some time in the future. With respect to customer advances, the commission said, it would be inequitable to have the ratepayers provide the funds for plant expansion, and also to pay a return on such funds. Until such amounts received by the company were refunded to customers, they would not be included in rate base calculations.

The company had sought to include the sum of $15,000 which represented the cost of land acquired in prior years and held for future use. These assets were not presently devoted to the public use, and the record indicated that there was no definite plan for such utilization in utility service in the foreseeable future. Accordingly, the cost of such land was excluded from the company's claimed rate base.

A working capital allowance equal to forty-five days or 12½ per cent of the company's total operating expenses was granted. *Re New Canaan Water Co. Docket No. 9932, September 14, 1960.*

Other Recent Rulings

Television Construction Permit. The U. S. court of appeals held that the FCC had not erred in denying an application for modification of a television construction permit where the evidence showed that a supplier of equipment had not made a commitment to lend funds to the applicant with which to build the television tower, that the applicant's principal stockholders had not demonstrated a willingness to commit the necessary money to finance the venture, and that the applicant had not shown it could build a structurally sound tower of the required height. *Deep South Broadcasting Co. v. Federal Communications Commission, 278 F2d 264.*

Notice of Denial. The U. S. court of appeals held that the purpose of a statute and FCC rules providing for notice of denials of applications for television channels is to give certain rights to applicants who have appeared in the matter and to provide a speedy way of bringing to determination pending applications for broadcasting stations, not to permit the filing of applications on behalf of unknown parties whose intention to file in no way appears. *Plains Television Corp. v. Federal Communications Commission, 278 F2d 854.*

Telephone Company Return. The Missouri commission approved a telephone company rate increase which would produce a 6.28 per cent return on a depreciated original cost rate base. *Dickens et al. v. Meramec Teleph. Co. of St. James, Case No. 14,421, July 12, 1960.*

Technical Rules Not Applicable. The Kansas supreme court pointed out that technical rules of pleadings such as govern civil or criminal actions are not applicable to applications or pleadings filed with an administrative agency, and added that liberality is to be indulged as to their form and substance. *Community of Woodston et al. v. Kansas State Corp. Commission et al. 353 P2d 206.*

Rural Telephone Rates. The Georgia commission held that it would no longer give favorable consideration to flat rural rates in telephone rate proceedings but would scrutinize future applications having flat rural rates to determine if it would be feasible to establish mileage rates in the rural areas of such exchanges. *Re South Georgia Teleph. Co. File No. 19536, Docket No. 1541-U, June 9, 1960.*

Telephone Return Allowance. A small telephone company earning a return of 4 per cent under existing rates was authorized by the Wisconsin commission to increase rates to a level calculated to yield a 6.5 per cent return on a net book value rate base. *Re Bruce Teleph. Co., Inc. 2-U-5302, July 15, 1960.*

Telephone Rate Increase. The Utah commission granted the Uintah Basin Telephone Association authority to increase rates to customers in a certain area by 50 cents a month in return for granting extended-area service to such customers, who were formerly required to pay tolls for calls outside the area. *Re Uintah Basin Teleph. Asso., Inc. Case No. 4898, July 26, 1960.*

Sale of Telephone Company. The Wisconsin commission approved the sale of Pardeeville Farmers Mutual Telephone Company to the General Telephone Company of Wisconsin upon a showing that

the sale would be in the public interest. *Re Pardeeville Farmers Mut. Teleph. Co. et al. 2-U-5375, August 11, 1960.*

Commission Jurisdiction. The Wisconsin commission held that it does not have jurisdiction to decide whether a proposed sale of a telephone company which is a member of a co-operative group violates a resolution of the officers and directors of the co-operative group requiring a two-thirds majority approval of all voting members and granting first purchase priority to a member of the co-operative group. *Re Richland-Grant Teleph. Co-op., Inc. 2-U-5242, August 23, 1960.*

Consolidation of Telephone Exchanges. The Wisconsin commission granted a telephone co-operative authority to purchase land, construct a building, purchase and install dial automatic switching equipment and station apparatus, and construct and install outside plant facilities in order to consolidate two exchanges which were badly in need of repair. *Re Nelson Teleph. Co-op., Inc. CA-3876, 2-U-5387, August 23, 1960.*

Rates Rise with Dial Conversion. The Nebraska commission authorized a small telephone company to increase rates to a level which would afford a rate of return of 6.05 per cent on a net book value rate base, upon completion of a dial conversion program. *Re Hyannis Teleph. Co. Application No. 22316, August 31, 1960.*

Auditing Expense. In lieu of determining a reasonable amount for conversion and outside auditing expenses of a small telephone company, as to which no contract figures were available, the Wisconsin commission determined a total dollar aggregate for "Other General Expenses" based on the experience of comparable utilities, which would provide for such auditing and conversion expenses as may actually be incurred, as well as other expenses falling within the same classification. *Re Farmers Teleph. Co. of Cochrane, 2-U-5394, September 12, 1960.*

Sale of Telephone Plants. Two small telephone utilities unable to provide the quality of service required were authorized by the Wisconsin commission to sell their plants to larger companies which would improve service, where the agreed price, based upon appraisals, was deemed reasonable and the transfer was otherwise in the public interest. *Re General Teleph. Co. of Wisconsin et al. 2-U-5399, August 25, 1960; Re Berlin Teleph. Co. et al. 2-U-5409, September 12, 1960.*

Return Allowance. The California commission granted a water rate increase which, after giving effect to evidence regarding decline in return, would for the future yield approximately 6¼ per cent, such rate of return being deemed reasonable. *Re California Water Service Co. Decision No. 60646, Application No. 41388, August 30, 1960.*

Supplemental Air Carrier Certificate. The U. S. court of appeals held that certificates granting a blanket authorization to supplemental air carriers to operate between any two points in the country is contrary to the Federal Aviation Act provision that certificates specify the terminal points and intermediate points, if any. *United Air Lines, Inc. et al. v. Civil Aeronautics Board, 278 F2d 446.*

Export Tariff Chosen. The U. S. court of claims held that an export tariff rather than a domestic one should be applied to railroad transportation of airfield landing mats moving to a seaport for export,

since, in construing freight tariffs when two tariffs are equally appropriate, the one which provides the shipper with the lower rate is to be applied and it is more logical to select an export tariff rather than a domestic one to cover export shipments. *Western P. R. Co. v. United States, 279 F2d 258.*

Unauthorized Transportation. The U. S. district court held that a motor carrier could not assert that its transportation of items not authorized in its certificate over a period of years rendered such transportation legal. *Sims Motor Transport Lines, Inc. v. United States et al. 183 F Supp 113.*

No Waiver. The Arizona supreme court held that a licensed contract carrier which had accepted lower payments than provided for in the filed contract had not waived its claim for additional money where the carrier had constantly asserted that more money was due and had made repeated demands for payment. *Builders Supply Corp. v. Marshall, 352 P2d 982.*

Statute Construction. The Florida supreme court held that the legislative intent of a statute the language of which is clear and unequivocal has to be derived from words used without involving incidental rules of construction or engaging in speculation as to what the judges might think the legislators intended or should have intended. *Tropical Coach Line, Inc. et al. v. Carter et al. 121 So 2d 779.*

Sewage Not Water. The Kentucky court of appeals held that a sanitation district was not a water utility subject to commission jurisdiction since it did not deal with water as a commodity, but merely used it as an instrumentality for carrying out the sewage disposal function. *Sanitation Dist. No. 1 of Campbell and Kenton Counties et al. v. City of Newport et al. 335 SW2d 908.*

No Acquiescence. The Louisiana supreme court held that the commission's refusal to grant a certificate to a carrier, after a court decree canceled a previously granted certificate on a similar application, could not be construed as acquiescence in the court's decree so as to destroy its right to appeal from the court decree, where the court had merely set aside the order and had not commanded that something be done or given. *Wisdom Moving & Storage, Inc. et al. v. Louisiana Pub. Service Commission et al. 121 So 2d 739.*

Agency Station Discontinuance. The Mississippi supreme court held that the commission was justified in authorizing a railroad to discontinue an agency station where the evidence showed that the railroad had lost money in the operation of the agency, that the agent's salary was out of proportion to the duties he performed, that very little shipping was done in the station, that alternate transportation was available, and that the closing of the agency would not affect passenger traffic or mail service. *Village of Myrtle v. St. Louis-S. F. R. Co. et al. 121 So 2d 717.*

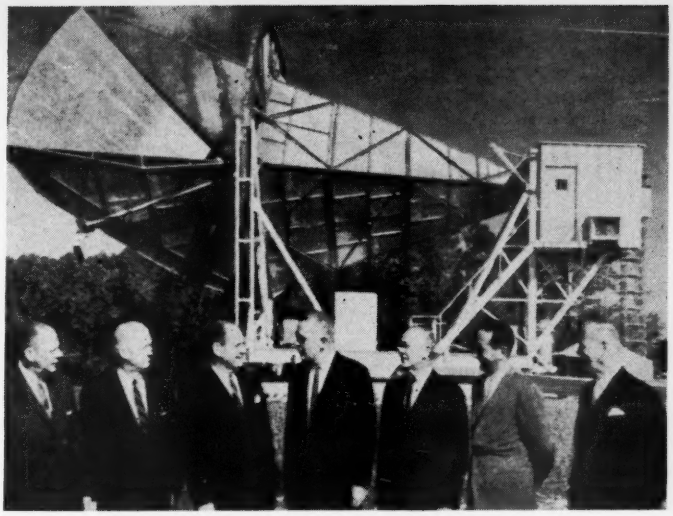
Railroad Safety Equipment. The Missouri commission ordered railroads operating in the state to equip each track motorcar with one generator-powered headlight and at least one taillight, a safety glass windshield, and automatic windshield wipers. *Re General Order Specifying Equipment of Track Motor Cars, Case No. 13, 892, July 8, 14, 1960.*

NDUSTRIAL PROGRESS

HE TELEPHONE NDUSTRY MOVES NTO THE SIXTIES

collection of individual statements n executives and other officials of phone companies all over the ted States clearly shows a deter- ation on the part of the industry meet future demands for service. meet those demands it must pre- e today technically, economically, ncially, to cope with the challenge he "Soaring Sixties."

FRANCIS X. WELCH, *Editor*



HISTORIC COMMUNICATIONS FIRST

Scientists bounce picture off Echo I. Could be prelude to world-wide picture and TV communication. Photo was taken at Bell Telephone Laboratories at Holmdel, New Jersey, transmitted by land-line to the U. S. Naval Research Lab at Stump Neck, Md. and then bounced off Echo I back to Holmdel.

Photo Courtesy Bell Telephone Laboratories

OR the fourth consecutive year, PUBLIC UTILITIES FORTNIGHTLY able to bring you an increasingly ular feature in its special issue uting the telephone industry. As in mer years, this Editor has col- ted a number of statements based responses by telephone company cutives and other officials dealing h their efforts to work out effec- e programs to meet future needs. e result, we believe, is a most in- rmative cross section about various blems and questions which con- nt the management people of the ephone industry, both Bell and In- pendent.

This compendium discloses a variety of facets of interest in the telephone business. There is on one hand a focusing of interest on new technology, as exemplified by the recent launching of Echo I, the communications satellite. There is on the other hand an obvious preoccupation on the part of many of the individual companies with revenue requirements and raising funds necessary to place modern plant facilities at the disposal of the telephone customers.

There is also seen, in some instances, a note of caution about gearing the industry's service facilities to future needs. What will the base of the economy of the nation demand in the way of telephone service and what will the economy of the future support along these lines? Here are indeed some thought-provoking individual views ranging the whole gamut of industrial interest for the telephone industry.

Following a generalized statement including reviews of leading Bell officials and an individual exclusive statement prepared for PUBLIC UTILITIES FORTNIGHTLY by the Chairman of the Board and Chief Executive Officer of the largest of the independent telephone systems, the other company statements follow alphabetically.

The Bell System and Space Communications

A message noting Bell System activities and statements by official Spokesmen with reference to this spectacular new field of development and future operation.

ECENTLY representatives of the Bell Telephone System appear- g before the Federal Communica- ns Commission outlined a plan for space communications network to rry telephone calls and television ograms throughout the world by e of a string of satellites circling e globe.

The satellite network, they said, uld enable nearly all countries in e world to communicate directly, thout intermediate facilities in other untries.

The casual observer could be ex- sed for consigning these predictions that sometimes fuzzy realm of "the future." In this case, however, "the future" was just around the corner.

For just a month later the world was electrified by banner newspaper headlines announcing that a human voice had been bounced off a man-made satellite orbiting 1,000 miles above the earth.

A Thor Delta launch vehicle had hurled a 100-foot plastic sphere into orbit from the National Aeronautical and Space Administration launching site at Cape Canaveral, Florida. A tape-recorded message from President Eisenhower was transmitted from the Jet Propulsion Laboratories at Goldstone, California, bounced off the satellite as it sped across the heavens at 16,000 miles an hour, and was picked up clearly by waiting scientists of the Bell Telephone Laboratories at Holmdel, New Jersey.

NASA immediately dubbed this new heavenly body Echo I.

Before twenty-four hours had passed, scientists at the two laboratories had carried on a two-way telephone conversation, their voices reflected from the man-made moon. Subsequently calls were placed through conventional telephone exchanges on the West coast, via the satellite to conventional exchanges on

(*Continued on page* 28)

the East coast. Signals also were bounced across the Atlantic to Europe. Conversations between Goldstone and Holmdel meanwhile had become just about routine and a new era in communications had been born.

Unlike the casual observer, the Bell spokesmen who appeared before the FCC knew that "the future" was just around the corner. They had no assurance, of course, that the planned satellite experiment would be successful on August 12th or any other given day but they were certain that it would be a matter of only a relatively short time.

As a matter of fact their testimony before the commission was designed to support the Bell system's position that space communication was indeed imminent and would require sizable frequency allocation in the portion of the spectrum above 890 megacycles. Along with other common carriers, the Bell system was concerned about a decision of the commission opening up blocks of frequencies for general use with no provision for space communications. A spectrum cluttered with a hodge-podge of private systems would, of course, make space communications virtually impossible.

Satellite System Delineated

According to Charles M. Mapes, assistant chief engineer of the American Telephone and Telegraph Company, a system of about 50 satellites in random polar orbits at a height of about 3,000 miles, could provide communications facilities between the United States and "all areas" of the world. About 26 transmitter-receiver stations, working in pairs and spotted throughout the world, would be needed to provide ground terminals.

Mapes estimates the cost of setting up such a system at $115 million—divided between $65 million for the ground installations and $50 million for the satellites. Each pair of ground stations, relaying signals via satellites, could provide 600 telephone circuits.

For about $55 million more, he says, the equipment could be adapted to also provide transoceanic television channels between each pair of stations.

"The cost, therefore, for providing the basic facilities for 600 telephone circuits and for television service between each of the 13 pairs of worldwide terminals would total approximately $170 million," Mapes estimates.

The Bell system would expect to make use of a satellite system for international communication and, in collaboration with such foreign orgizations as might be involved, wo expect to share the cost of launch and maintaining communication sa lites.

Some Practical Considerati

James B. Fisk, president of Telephone Laboratories, declares t while radiotelephone and the grow network of submarine cables now s ply telephone service to most of world, they cannot supply all of communications services that available domestically.

He says that the United Stat with only 6 per cent of the worl population, now has 55 per cent the telephones, adding:

"We will necessarily expect a t mendous increase in telephones abro as the 94 per cent of the world's p ple outside the United States beco more industrialized. In addition talking with many of these people telephone, we will need to commu cate with them by transmitting a receiving data and other busine communications, and by means television."

Fisk says it would be impracti for satellite systems to share freque cies with cross-country microwa systems, pointing out that satell system ground receivers can functi only if they are well beyond the ho zon from any ground microwa transmitters operating on the sa frequency.

"Our future in world communic tion and our future in the explor tion and in the exploitation of spa depend on the wise use of the ve limited range of frequencies in t electromagnetic spectrum which suitable for satellite communicati and for other space purposes," h contends.

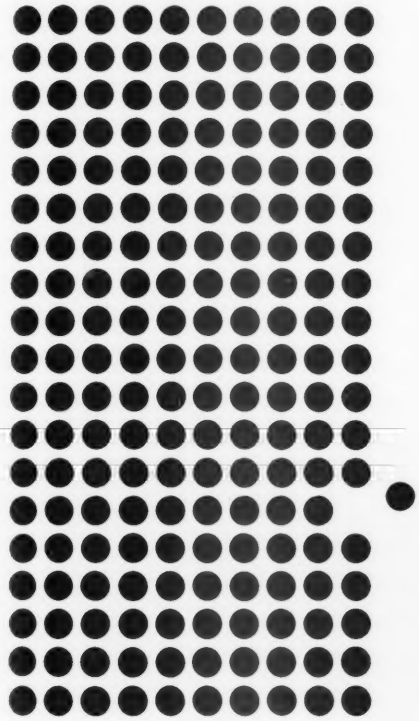
"We firmly believe that it is clea ly in the public interest at this tim for the Federal Communicatio Commission to conserve the use the frequency spectrum and to mai tain its earlier sound policy of r stricting the licensing of private m crowave systems."

Fisk says the most favorable fr quencies for space communicatio range between 1,000 and 10,000 mega cycles, although those up to 16,0 megacycles might be used. "Natura laws" prevent the use of frequencie above 20,000 megacycles for reliabl satellite communications.

Frequencies above 890 megacycles according to Fisk, also are neede for many military and governmenta

(*Continued on page* 30)

WHAT IS A TEMPORARY ENGINEERING SPECIALIST?



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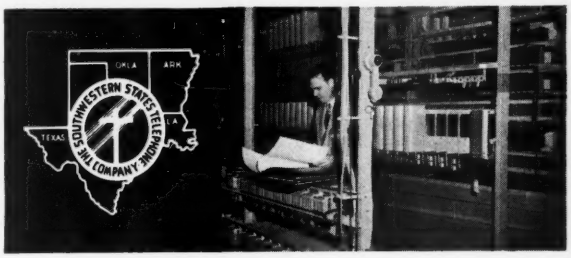

A YEAR OF *EXPANSION* AND *PROGRESS*

The Southwestern States Telephone Company now provides modern efficient service to 150,000 telephones in various areas of Texas, Oklahoma, Arkansas and Louisiana. Our construction program is geared to meet the exacting demands of military, industrial and residential subscribers throughout our exchange areas. Total plant investment now exceeds $46,450,000, an increase of 104 per cent during the past five years.

THE SOUTHWESTERN STATES TELEPHONE COMPANY

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uses such as Nike radars and the spaceman Project Mercury.

The Bell Laboratories, Fisk reports, "are engaged in an extensive program of experimental research aimed at bringing into being a worldwide commercial satellite communications system as early as possible." He states:

"The Bell system would hope to have an active satellite system launched by a contractor just as soon as intensive development work now being carried out on satellites and the communication equipment to be carried in them gives assurance of reasonable technical and economic success."

Mapes contends that space communications are "absolutely necessary" to provide for the needs of the future. He says the Bell system has spent "sizable sums of money" for research on satellite communications and stands ready to spend "even larger sums" for experimentation, design, engineering, and construct

"If we can be assured of rea ably adequate frequencies to pro for the future we will continue work," he promises. "If frequen are available, there is no reason America cannot lead the way in new form of communication."

AT&T Head Sets Record Strai

In a recent lecture at the Uni sity of California at Los Ange Frederick R. Kappel, president AT&T, painted a bright future satellite communications but at same time decried the fact that m public statements gave the errone impression that the job was all do Pointing out that many questions were to be resolved as the world sto on the threshold of this new era communications, Kappel said:

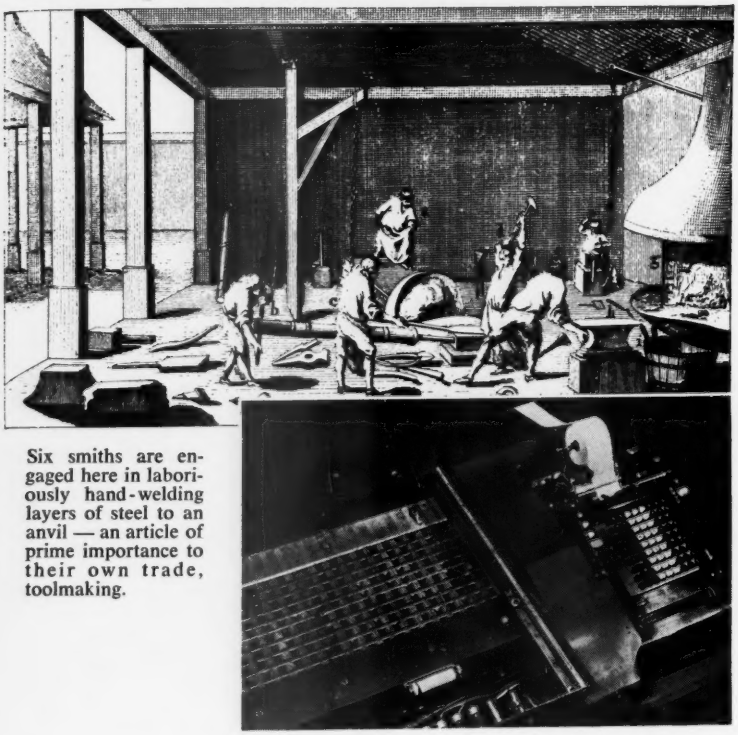
"These questions are both dom tic and international. Some of most crucial arise from the fact t to communicate via satellite, it necessary to use radio frequencies huge quantities. The radio frequen spectrum is, of course, a natural source, and the frequencies that c be used for satellite communicatio are limited. The best area is fr roughly 1,000 to 15,000 megacycl with some possibility also of usi the range from 15,000 to 20,000. the extremely high-frequency rang rain blocks off transmission. In t lower range, sky noise increases, a besides, big bundles of frequenc are already in use.

"Every satellite communicati system will consume, over a wide ge graphical area, and across nation boundaries, a large number of t frequencies that are suitable. It is tr that by careful assignment of diffe ent sets of frequencies, we can e pect different systems in various par of the world to function successful even using the same satellites. Neve theless there is a definite limit to t possibilities, and the saturation poi will be reached most quickly in tho areas where the volume of commun cations is heaviest—as for examp between North America and Europ

"Obviously, satellite communic tion systems must not interfere wit each other, and matters must also b arranged so that other uses of micro wave radio—uses that have nothin to do with satellites—will not inter fere with and overpower the fai signals from space. To define the use of frequencies in various regions, w shall need the most thoughtfully con sidered international agreements.

"Also, since the number of fr

many steps vs. "ONE"



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cies is limited, this will test the om and foresight of each nation now in charting domestic poli- In the United States, for exam- there are at present no frequen- specified for space use in the fre- cy range most suitable for satel- communications — that is, the e above 890 megacycles. But e are any number of claimants would like to use such frequen- for various purposes. Great care t be taken to make sure they are wasted. It will be fruitless to cre- satellite communication systems, at the same time create a short- of the frequencies required.

Satellite Systems

Here is another question: What t the ownership and operation of llite systems? People have several s asked me whether the Bell sys- for instance, will some day own llites. My answer is this:

I think we should share owner- of any space communication sys- we may use, just as we now e ownership of ocean cables with phone companies and administra- s overseas. This puts full respon- lity for the service right where it ngs—that is, with the organiza- s that provide the service. As I earlier, all parts of a communi- on system have to be designed and lt and operated as units of the ole. Whether our overseas links go space or across the ocean floor, purpose is always to connect any phone in this country with any phone in another country. To do well, we and our partners over- s must take the same kind of re- nsibility for the links *between* ntries that we each take *within* ntries. This is the essential, and particular type of system em- yed—cable or satellite—has no bearing on the question.

"I do not know that the Bell system would go into the satellite-launching business. Today we ask contractors to build our buildings, and in the future we might ask other contractors to launch our satellites. That way we would still risk our own money—design and operate a system in harmony with all the rest of the telephone network—and be fully responsible and accountable for the service we provide.

Bell's Responsibility

"Here I am looking ahead quite a bit. In the present stage of experiment and exploration, with space vehicles being launched for many different purposes, it is natural for the government to take the lead in putting up satellites. But when we come to providing communication service, I think we in the Bell system should take all the responsibility we can for the job that is given us to do.

"To be more emphatic, I am certain that this will be in the best interest of the United States. We need only look at the record to know that private enterprise has given this country the finest, the most complete, the most dependable communication system in the world. I strongly believe that private enterprise will also keep this country out in front in space communications, just as we have led the way on land and by sea. It was the Bell system that pioneered world-wide telephony, first by radio and later through cables. We want and intend to be pioneers tomorrow too. We are ready, willing, and able to push ahead. All we need is the leeway, the freedom, to do our best.

A Challenging Future

"I have discussed communications in the space age. I hope I have been able to convey my feeling that the future is loaded with exciting possibilities. But I must re-emphasize in conclusion that all world-wide communications in the space age will not be communications through space. Because the number of satellite systems we can create will be limited, a growing network of submarine cables will also be a necessity. And as populations increase and there is need for more and more communications across the seas, there is room for an indefinite number of cables in the 'inner space' of the ocean depths. Paradoxically, there is more room for communications on earth than there is in space. In the long run, performance and economics will be the deciding factors. But a good estimate, I think, is that the two kinds of systems could very well complement each other; and certainly the existence of alternate systems would increase the overall reliability of overseas communications.

"There are challenges here for us all—for scientists and engineers, of course; for the management of the communications industry in every nation; for government leaders; and surely for educators, who must develop and train people for all these groups. Such is the age we are entering that I hope the general public, also, will gain a basic understanding of space technology and the broad problems and opportunities it presents.

"I predict that by whatever means will serve the public most efficiently, we shall succeed in providing the requisites for a new era in world communications. And I conclude with the thought that in the space age, communications will play an ever-increasing part in the affairs and progress of mankind."

(*Continued on page 32*)

KEEPING PACE WITH PROGRESS . . .

Carolina Telephone is observing its 60th Anniversary with a continuing program of expansion and improvement.

The company expects to spend about $9,500,000 for expansion in addition to salary and wage payments and dividends totaling more than $12,000,000.

Putting these millions into circulation helps boost progress and prosperity throughout Eastern North Carolina.

Carolina Telephone

Serving Variety Vacationland

General Telephone & Electronics Corporation

New York, New York

DONALD C. POWER, *Chairman of the Board and Chief Executive Officer*

ALTHOUGH the American economy has reached the record-breaking level of more than half a trillion dollars annually in goods and services, it has become increasingly clear that this country's rate of economic growth must be accelerated if we are to meet the greater demands of the future—not only here at home but abroad. More specifically, industry must re-double its efforts to create new products and services, broader employment opportunities, more efficient operations, and more effective marketing and distribution. These are the keys to faster economic progress and rising living standards.

In the telephone industry, all of us are aware what the future will demand in terms of continued high levels of capital expenditures for new plant and equipment, not only to expand and improve existing services but to introduce new concepts in communications. We also know that in order to raise the unprecedented amounts of new capital we will need in the future, we must earn a fair return on the capital already invested in the business. This again points up the necessity for assuring that our services are adequately priced, which will enable us in the long run to provide *better service* at *lower prices* to our customers.

These are areas of continuing major concern to all of us in the telephone business, but there is another question of equal importance. It involves telephone *people*. Are we devoting sufficient attention to the role that telephone people will be called upon to play in the expanded future of our business?

It goes without saying that the success of any business enterprise is dependent upon the quality and effectiveness of its people. No matter how much new capital is available to finance new plant and equipment, real growth in the final analysis is limited by the ability of people in the organization to put that money to work effectively—to translate that capital into more efficient service to their customers, at the lowest possible cost consistent with maintaining a healthy enterprise and earning a fair return for the company.

Over the years, telephone people have worked diligently and effectively to expand and improve telephone service. As we look ahead, however, the service horizon is broadening steadily. The telephone business is becoming more and more a full-fledged *communications* business, extending far beyond the usual concepts into many other services, particularly in the industrial and commercial fields. This trend presents all of us with challenge of developing and tra our people to meet tomorrow's quirements. The need is espe important in regard to supervi and managerial personnel—the who will move into positions of ership in the years ahead.

This involves far more than tablishing a formal manage velopment program, well conce though it may be. Before any d opment program can be truly e tive, management must establish *climate for success*. First, man ment must make up its mind w it wants to go and then proce develop the organization necessa get there. Second, management insist on the *positive* approach, search for new and better way doing things, in contrast to the ov conservative viewpoint which jures up a thousand and one rea why something cannot be done.

Keeping pace with our expan economy in the years ahead wil quire entirely new thinking and approaches, which frequently wil quire us to discard some tradit and policies we may have had years. This will be the only way can participate fully in the new portunities ahead of us.

California Interstate Telephone Company

Victorville, California

WILLARD WADE, *President*

AS was predicted in this column last year, we found it necessary to file for an increase in rate levels. Our tremendous rate of growth coupled with rates which were established in 1952 did not provide the revenues necessary to continue an accelerated expansion program.

The company sought an interim increase to produce a gross increase in annual revenue of $421,000. The California Public Utilities Commission authorized increases in exchange and toll rates which provide an estimated increase in annual revenue of $201,000.

When the separation studies, ordered by the Public Utilities Commission in granting the interim increase, are completed, it is probable that the company will file another application, supporting and possibly increasing the rates authorized on an interim basis.

Until revenues can be brought into proper perspective with plant investment, it will be necessary to stabilize our rate of growth or seek additional revenues.

Notwithstanding the foregoing remarks, California Interstate Telephone Company has had an impressive fiscal year which ended March 31, 1960. Percentage of held orders were reduced from 8.9 per cent 1955 to 6.2 per cent in 1960 w the actual number increased f 1,122 to 1,569 during the same per Investment in telephone plant creased $5,380,909 or 26 per cent new automatic exchange in Wri wood has been established. This a was formerly served by the Pac Telephone & Telegraph Company a toll station basis. Plans are un way and authorization has been ceived to establish an exchange Lucerne Valley.

California Interstate, as of July 1960, operated 29 exchanges of wh 28 were automatic, serving 26,2 telephones in an 9,490 square m area of California and Nevada. long distance network has been e panded through additional microwa and physical circuits to a total of 300 circuit miles. Five toll cen serve this network.

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California Water & Telephone Company

San Francisco, California

PETER A. NENZEL, *Vice President & General Manager*

THE first few months of 1960 has witnessed the continuing dynamic expansion and modernization programs which have characterized the operations of the California Water & Telephone Company in recent years.

With a construction budget expected to total $14 million, making it the largest in the company's history, major expenditures will be in the field of central office buildings, and equipment, station apparatus and installations, and cable construction.

Constantly alert to service improvement opportunities, a dial conversion program, which now includes 97.5 per cent of the total stations in operation, is being pursued to the point that within the next twelve months the company will be 100 per cent dial operated.

This objective represents only a portion of the service expansion program. Coin box customer dialing, the first installation of its kind in the country, was placed in operation for a large portion of the company's metropolitan subscribers in late 1959.

All California Water & Telephone Company exchanges in the Los Angeles extended area are now connected to the nation-wide direct distance dialing network, and this service is being expanded to other exchanges in January 1961.

The dead letters are being removed from the dials of subscribers in 17 of the company's 29 central offices by adoption, in these serving areas, of the All Number Calling program.

Programming in the area of customer relations, itemization of multimessage calls, without charge, for subscribers in the Los Angeles extended area will become another CW&T service to its customers by the end of the year.

The value of a continuing vigorous effort in the field of sales and merchandising is manifested by results which now produce revenues approaching $1 million per year.

In addition to this a ratio of 20 extension telephones per 100 residence services has been achieved representing a growth in this area of over 300 per cent in less than four years. Particularly gratifying are those revenues resulting from programs designed to expand the public telephone facilities. This effort has witnessed an improvement of over 25 per cent in annual revenues since its inception.

Training and Development are increasingly important areas of concentration and emphasis at California Water and Telephone. All supervisors attend a two day seminar on Human Relations. Selected supervisors are sent to colleges around the country to attend courses in Communication, Leadership, and Utility Economics, among other subjects. Incompany training classes for all line supervisors have been conducted in the subjects of The Supervisors Role and Training Your People. Planned are classes in Employee Appraisal and Development; Dynamic Leadership; The Role of the Corporation; The Labor Contract; and many others. On an hourly level we have a four year program of apprenticeship training, sales training, and a new program for advanced journeyman training. We are considering pre-supervisory training classes, advanced training in clerical, engineering, and accounting practices, and business organization theory conferences for supervisors.

(*Continued on page* 34)

New techniques
COMMUNICATIONS

stav Hirsch Organization, c., offers the most comprehensive program in the communications industry — skilled gineering, quality construction and many special services.

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Capital City Telephone Company

Jefferson City, Missouri

JAMES F. MCHENRY, *Secretary*

THE number one long range problem for many, many companies continues to be that of providing basic service of a grade consistent with general progress in telephony.

Considering only the base rate area, a substantial percentage of customers are still served with four-party service. In the rural areas, eight and ten-party service remains the standard.

Even if such service is presently "acceptable," both to the telephone companies and their customers, it is so only from the viewpoint of economic necessity and expediency, and not from the standpoint of desirability.

It can be clearly proved that users of four-party service do not rely on the use of their basic service to the extent that private line users do, and in the case of rural eight- and ten-party service, the service is frequently more a source of irritation than convenience.

It matters little that newer and better instruments, switching systems, distribution material, toll systems accounting techniques are develo if the grade of the basic servic such that the telephone can no relied on confidently and comple

As far as capital requirements concerned, this is by far the challenging problem facing us. embark upon such a program of eral upgrading of basic services quires a definite plan of opera over perhaps a long period of ye Goals must be established and b eted for. The entire management must be oriented toward these g and their significance. This may volve considerable education, in mation and perhaps more of p suasion.

If we do not engage in this p gram on a positive, initiative ba we will sooner or later find ourse doing it on a negative, defens basis. Just as in the case of the roads, competition will swiftly surely penalize us for our shortc ings—and such penalties have a of being permanently damaging.

Carolina Telephone and Telegraph Company

Tarboro, North Carolina

J. F. HAVENS, *Vice President*

Merchandising

PLANNED employee merchandising within our company is relatively new—yet during the last three years, it has produced annual revenues totaling approximately $3.5 million.

There was a time when many telephone companies took this attitude: "Our service is available. If you want it, ask for it." As a result, the public was generally unaware of—or apathetic to—many of the service facilities offered by the telephone industry. One centrally located telephone was often considered adequate for home or office.

Today most companies recognize that energetic marketing is essential in order to effectively compete for a fair share of the consumer's dollar.

In our company the marketing effort is not limited to personnel classified formally as sales representatives. Employees who have day-to-day, on-the-job personal contact with the public participate in an organized sales program and are recognized for outstanding sales results.

Recognition includes publicity in newspapers and the company publication, together with recognition b quets and awards of cigarette lighte bracelets, silver hollow ware, a radios.

Nearly 300 persons of the 2,3 employees of the company are c sidered contact employees. General these employees are representatives the Plant and Commercial Depa ments. Station installers, when vis ing subscribers' premises, and serv representatives, during business-of contacts, invite to the attention subscribers such things as color s additional main lines, extensions, e tra directory listings, spring cor and other miscellaneous equipme Sales efforts are not limited, ho ever, to on-the-job contacts.

Competition between individua exchanges, and districts is keen. E ployee reaction to the program h been enthusiastic. Although the pr gram has been in effect for thr years, employee interest remains hig Employees who had no idea of the ability as salesmen three years a have consistently produced outstan ing sales results. In several instance

ployees whose jobs do not require the-job contact with subscribers e produced successful sales re- s by ontacting prospects after iness hours.

Results of this sales effort have eeded optimistic predictions. An- l revenues have been increased. scribers are becoming increasing- ly aware of the services which we have to offer, and the program has enerated **a sense of proprietorship** among participating employees. In addition, significant public relations benefits have been produced by the increased number of subscriber contacts and by the enthusiasm of employees involved.

Central Telephone Company

Lincoln, Nebraska

TORAL DUCKETT, *Vice President*

o meet the financing require- ments of large construction pro- ms, a problem facing most ependent telephone companies is ncrease operating revenues. Such he case of the Central Telephone mpany, and its associated compa- s, Virginia Telephone & Tele- ph Company, Southern Telephone mpany, Lexington Telephone Com- y, Middle States Telephone Com- y of Illinois, La Crosse Telephone rporation, and Southeastern Tele- ne Company.

The principal items wrapped up in revenue package are local service, ectory advertising, and toll service enues. Within the Central Sys- the source of these revenues is der constant study and is of great ncern to the officials of the com- nies. When all other means fail d an increase in revenue is impera- e, it becomes necessary to obtain reases in local service rates from subscribers.

This, however, should be the last p to be taken to provide these in- ased revenues and officials of the stem are constantly pursuing the ssibility of increasing other sources revenue before requesting these ditional local service rates from the scriber.

A continuous merchandising effort conducted to increase the use of in line extensions, or special services which the subscriber requires, thus increasing the revenue in this fashion. Specialists are in charge of telephone directory advertising and every attempt is made to obtain as much revenue from this non-investment source as practical.

The other source, toll revenue, insofar as the independent companies are concerned, is dependent upon two factors; (1) the amount of toll usage by the subscriber; and (2) the division of the toll revenue as between the independent companies and the Bell System companies. Every effort is made to encourage the subscriber to use more toll.

Of great concern to officials of the Central Telephone System is the toll settlement received from the Bell System companies, and they heartily support the efforts made by the United States Independent Telephone Association in the negotiations with the Bell companies to obtain the best possible compensation for the independents in the division of the toll revenue.

An item of concern is the disparity in toll charges as between interstate and intrastate. This difference causes numerous subscriber complaints. It is hard to understand and difficult to explain the reason for shorter intrastate calls often costing more than the longer interstate calls. In that any changes in the rates of either the interstate or intrastate calls affect the revenue of the independent, consideration must be given to the independent companies for losses they will experience as such adjustments are made. It is further necessary that proper consideration be given to all items as the basis of settlement is worked out as between the independent companies and the Bell System companies.

If an independent company cannot obtain fair compensation through the standard settlement which is to be developed between the United

(*Continued on page* 36)

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States Independent Telephone Association and the Bell System companies, the particular independent company should not hesitate to request a cost study with the Bell System. In any such cost study which the Central System would participate in, we will insist that the U.S.I.T.A. separation manual be used as a basis of the determination for the division of the toll revenue. Companies of the Central System will make every effort and take whatever action necessary in order to receive proper compensation from the Bell System in the division of the toll revenue.

Inasmuch as the local service rates of the independent companies are, in many cases, higher than those char by the Bell System, it would s that a more equitable division of toll revenue is required. This wo permit increased revenue to the dependent companies without the quirement of requesting increa local service rates from the s scriber.

Commonwealth Telephone Company

Dallas, Pennsylvania

H. H. BUTLER, *Vice President & General Manager*

THE Commonwealth Telephone Company's gross construction for the past three years—1957 through 1959 averaged about $2.5 million dollars. It is expected that the construction requirements will approximate that level this year and in 1961. The company has 92 per cent dial telephones with 6 per cent common battery manual and 2 per cent magneto. One of the small magneto offices will be cut to dial in January, 1961. In September of this year, we cut over our largest remaining magneto office to common battery manual as an intermediate step to dial conversion. Also during September, there was effected, through plant relief, the complete elimination of all overloaded rural lines. As a result of this program there will be no multi-party service having more than ten customers on a line.

Revenue from the company's message toll service has had a heal increase, running more than 12 cent above the level for the cor sponding 1959 period.

The company is in the process reassigning telephone numbers all of its exchanges, which will c respond with the nationwide patt for direct distance dialing. By end of the year, 53 of its 73 changes will be on a 2-5 number an ANC basis. Additional exchan will be cut over to this basis dur 1961.

During the year, the company adjusted the local service rates 13 of its 73 exchanges bringing th up to the company-wide level rates. All but one of these exchang whose rates were not up to compan wide level, were formerly operat by predecessor companies. The rate adjustments, together with t improvement in toll revenues, has r sulted in an improvement in earnin

The company has been increasi its development in PBX service a in key equipment. It has also ma substantial improvement in its exte sion stations development. Betwe December 1957 and June 30, 196 or in two and one half years, rat of residence extension telephones residence main telephones, has i proved from 9.4 per cent to 13.5 p cent—a betterment of 44 per cen We expect this improvement to co tinue at a substantial rate.

During the latter part of the yea Commonwealth passed a mileston when it installed its 75,000th tel phone.

In October, the company is pla ning to sell 42,700 shares of its com mon stock to its stockholders throug a right offering of one share for eac ten. The proceeds would be used t reduce the amount of temporary bo rowings from the bank.

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The Eastern Indiana Telephone Company

Winchester, Indiana

FRANCIS SIMPSON, *Executive Vice President*

The following statement was accompanied by a copy of an editorial in the Muncie *(Indiana)* Star *which commented on an observation by the Chairman of the Indiana Public Service Commission, Honorable Robert S. Bebb, to the effect that telephone and other utility rates could be cut all over the country if the federal corporation income tax were repealed. Mr. Simpson's statement in reaction to such comment follows:*

THIS editorial prompts me to forward information in regard to money collected by the Eastern Indiana Telephone Company from its subscribers in the form of taxes, Social Security, Unemployment, etc. During the year of 1959 the amount of these funds was $456,262.25.

Subscribers of the Eastern Indiana Telephone Company live in and are served from telephone exchanges at Winchester, Saratoga, Ridgeville, Redley, Dunkirk, Parker, Farmland, Lynn, Fountain City, Centerville, Cambridge City, Modoc, Losantville, Greensfork, Williamsburg, Economy and Hagerstown. At the end of 1959, 14,412 main line phones received service from these exchanges and the funds collected as described below, amount to $31.66 per main line station.

Kind of Taxes	*Paid by Company*	*Paid by Customer*	*Paid by Employee*	*Total Taxes*
Real & Personal Property ..	$ 56,704.01			$ 56,704.01
Indiana Gross Income	16,712.71		$ 5,633.10	22,345.81
Indiana Unemployment	1,449.84			1,449.84
Federal Unemployment	974.15			974.15
Social Security	11,332.22		11,690.77	23,022.99
Federal Income	155,215.31		64,951.20	220,166.51
Excise Tax		131,598.94		131,598.94
Total	$242,388.24	$131,598.94	$82,275.07	$456,262.25

Elyria Telephone Company

Elyria, Ohio

WELDON W. CASE, *President & General Manager*

Our New Complexion for Our New Decade

THE complexion of the telephone business, or any other industry, at any given moment will be determined for the most part by the problems which confront that industry and the subsequent solutions to those problems that those charged with the management of that industry employ. Perhaps the only way for us to envision those problems and some of their solutions is to look back at the several decades just past to see what problems or what forces made our industry look as it does today. As an industry, ours has perhaps reached a point in mechanization far beyond that of other industries, and this has been brought about in spite of our position as a protected monopoly by those economic forces which have made it not only advantageous but mandatory for our companies to reduce costs of operation by employing every conceivable improvement in the art of telephony. Dial telephone service—direct distance dialing—punch card billing—are only a few of the realities today which were brought about by this tremendous and driving force of attempting to make a profit by effectively reducing costs.

The problems we will encounter in the sixties are many, and they will continue to revolve around this element of further reducing costs. As you know, there are three accepted ways of increasing, or rather, maintaining profit levels in the telephone industry: 1) by the processing of periodic rate cases, 2) the sales of additional items of equipment which tend to better utilize our facilities, and 3)—and in my opinion most important — the reduction of costs through improvements in the art.

Now, how will this affect our small companies? In 1951, when it was first my pleasure to serve as president of the Ohio Independent Telephone Association, in discussing the problem of the small company, it was general-

(*Continued on page* 38)

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ly agreed that a telephone company at that time with less than 500 stations was considered to be a non-economic operating unit, and that in order to provide even the minimum service, such companies should seriously consider combining with other companies to form a feasible economic unit. By 1956, when it was again my privilege to serve in this office, and when we were again discussing the same problem, this figure had risen to 1,000 stations, and I now call your attention to an article which appeared in *Business Week* in the issue of August 20th, dealing with our industry, which says, and I quote: "Any company with less than 10,000 telephones is uneconomic." I think this has been pointed up most vividly by the fact that in the ten-year period, 1950 to 1960, our number of companies has reduced from 5,500 in 1950 to 3,400 today.

This is a healthy sign. This means that our enterprise is, for the most part, delivering a better grade of telephone service to the public for less money than it could have had it not taken advantage of some of the benefits of efficient operation through an economically sound unit.

Now what are some of the physical problems we're going to face in the sixties? Large company and small alike, we'll face many problems and be pressured by many groups for additional and expanding service, but the one outstanding demand which will be made on our industry during the next decade will be for a significant expansion in the calling area of our customers. This is evolution. Major highways, turnpikes, today's automobiles have shortened distances to a point that people who live 15 or 20 miles apart are no further than next door neighbors, and our companies will be called upon to furnish the kind of service which will enable those people to call among one and other without toll charges over what we now consider to be rather large distances.

There are those who say that EAS ought to be paid for by those who use it, and therefore, with mechanization through DDD, the only fair method of providing this service is on some sort of a toll basis. But I call attention to the fact that no service that is provided through our tax dollar erates in that manner. We pay same amount of money for the m tenance of our school system whe we have any children in school whether we don't; we pay the s amount for our highways, both m tenance and construction, regard of how much or how little we those highways. A quick look at economic way of life clearly indic that we are going further and ther down the road of charging eve one for service which is gener conceded to be in the best pu interest.

There is one other area which see a marked change, not only in industry but in every industry, d ing the 1960's, and this deals w people and the means by which people are motivated and inspired do the job. Our people will be be educated and better trained. Only cently have courses of study been up in major universities for exe tives and technical people in our fi The sixties will see a great expans of this program. We'll learn how do the job better and at less cost. whole new theory of the direction people will come forth out of t decade—one in which people will p form by inspiration, and essentia do the job because they want to do not because they have to. This is a solutely essential, because we can appreciably raise the price of o product as related to an hour's p for if we do we reduce—and not crease—the standard of living of o people.

It is obvious that we're in for qu a decade, if for no other reason th the population explosion. This w make itself felt primarily in the su urbs and rural areas served by o segment of the industry. I predict th the number of telephone compani in our industry will further reduce the 1960's, perhaps at even a great rate than during the past decade that our industry will come of age its own right—that the service whi we offer to the public will be amon the best in the nation—and that o securities will find acceptance amon the people of this country second no other industry—that our peop will rise to the occasion—will be be ter educated, and will, incidentally, far more successful profitwise—th will have to be in order to provid the service that will be expected o them.

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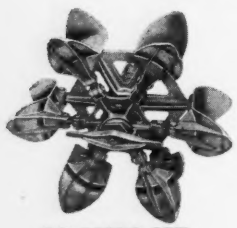

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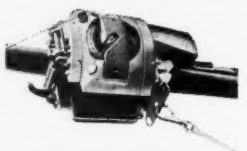

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Florida Telephone Corporation

Ocala, Florida

MAX E. WETTSTEIN, *President & General Manager*

HAVING completed its dial conversion and 2-5 numbering programs in June, 1958, Florida Telephone since that date has been busily engaged in toll mechanization programs throughout its central Florida operating territory.

At the present time, five installations of direct distance dialing have been completed in various sections of the operating territory. Some of these which were strictly regional at the beginning have now been expanded to a nationwide basis. Presently approximately 32 per cent of the company's total toll business is handled on a DDD basis with the customers dialing their own station to station long distance calls without operator assistance. This program is a continuing one and additional networks are scheduled for next year. The company estimates that approximately 45 per cent of its total toll volume will be DDD upon completion of the additional networks next year. Because the company's very large volume of toll business and unusually high toll revenue per station, DDD has effected substantial reduction in traffic per station costs in the comparatively short period of time it has been in use. Primarily because of DDD, the number of employees required per 10,000 telephones has also been reduced appreciably in the last three years.

Additional mechanization plans include conversion to IBM operation the latter part of 1960 and establishment of PPCS (person to person long distance dialing by customers) in 1961 and 1962. Because of the large volume of DDD messages when combined with PPCS, the IBM conversion is highly desirable as an economy measure in respect to the accounting phase of the company's operations.

Florida Telephone's rapid growth continues with the rapid growth of its operating territory in Central Florida. In the past decade, Central Florida's population increased 83 per cent. The number of telephones in service in the company's eight county operating territory increased 234 per cent in the same period. In addition to a comprehensive mechanization program, the company has also been confronted with the challenge of phenomenal growth in the most rapidly growing state in the union. In the past decade the company has increased from about 45th in size to about 28th in size, based upon operating revenues of the 3,600 independent companies in the country. Presently in terms of revenues it is Florida's largest independent company not part of a holding company group.

Many telephone companies have not only experienced the challenge of rapid growth as we have in Florida but have also felt the terrific impact of inflationary trends associated with this post war era. We have become firm disciples of mechanization wherever possible as an outright necessity in order to furnish satisfactory service at the lowest costs possible. Managements of telephone companies must be progressive and alert to developments in the art of communications which will not only reduce operating costs but which will also improve service. This is an obligation which all of us have in minimizing the amount of rate increases which may be required and in keeping the costs of our service to the public as low as possible.

Grand River Mutual Telephone Corporation

Princeton, Missouri

C. W. CHASTAIN, *General Manager*

GRAND RIVER received a loan of almost $2.5 million from REA. Dial service will be provided, through this loan to 3,600 customers in an area presently served by nine Grand River owned exchanges and eleven separately owned exchanges. There will be eleven dial exchanges which will bring the company total to 39 dial offices and 16,000 phones.

Telephone companies nearly lost the 750 station exemption in wage-hour legislation. This near-catastrophe should teach us that it is time to relegate this exemption to the ash-heap and help to get legislation enacted for its orderly removal.

The old axiom "if you can't whip 'em, join 'em" applies to the telephone industry, too. But, if you wait to "join 'em" until you are at the undertaker's, it's too late.

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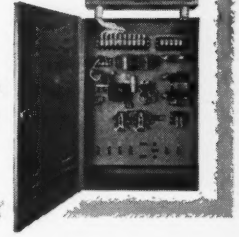

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Gulf States Telephone Company

Tyler, Texas

MORRIS S. BURTON, *Vice President*

spite of the evidence of the 1960 decennial census data, which reted wide-spread migration in xas from the farms and the smaller es to the larger cities and indusal areas, Gulf States Telephone mpany, operating in sixteen Texas unties, has continued to show ady, solid growth in its operations. ly three of the sixteen Texas couns of Gulf States operations gained population, 1960 over 1950.

By the end of 1960, total telephones should exceed 26,200 in serv with gross invested capital exceed five million dollars. These expected results represent a 50 per cent gain in stations and over a 100 per cent increase in gross invested capital in the 1950-1960 period. All Gulf States exchanges are now either dial automatic (65 per cent of total stations) or common-battery (35 per cent of total stations). One new exchange has been established in 1960.

To expand service sales and to more adequately meet needs of subscribers, a concentrated sales and merchandising program has been initiated with departmental organization. Sales emphasis has been to properly advise employee groups on equipment and services available, proper rental and installation rates applicable to such equipment, and to train all employees on techniques of sales and promotion activities. Results show that telephone employees can develop the art of sales, using such training in daily contacts.

Plans for the future include conversion of the five remaining manual exchanges to dial operations, strengthening by circuit additions in the toll line network of Gulf States (now totalling almost 5,000 circuit miles), emphasis on sales of service and equipment, and stimulation of employee interest and efficiency.

The Lima Telephone and Telegraph Company

Lima, Ohio

GEORGE B. QUATMAN, *President and General Manager*

AM now rounding out 56 years of active work in the telephone instry in all of its branches—plant uipment, engineering, architecture ork, commercial and financial, manging and operating. I tell my friends at it is not a question of knowing ore than they do, but I have seen ore in my life span.

Periodically, we have a complete olution in the telephone art. From ck in the days of wet batteries in lephone instruments to the dry cell, om magneto to common battery, to al, from open wire to cable with nited transmission distance, to coial cables to carrier, to micro-wave. think now we are at a complete w turning point in telephone equipent and methods. In short, we are the electronic age.

I have had the opportunity of visitg laboratories of the Bell Comny where I spent a few years of y life in the Western Electric equipent engineering division; I have so visited laboratories of four of r independent manufacturers, and e developments of tomorrow are nenomenal. Every now and then we ad in the magazines of something w that I have seen in laboratories n to fifteen years ago.

There is much for tomorrow in e method of operation of telephone mmunication which will obsolete ractically everything that we are ing today. There will be printed rcuits in electronic operation of cenal office switching systems, microave will become cheaper and more reliable and more practical for short haul use, and we will be bouncing our intercontinental, and other long haul circuits, off the skys.

We are in an era of miniaturization, even in telephone instruments, we will have pocket telephones similar to our miniature pocket radios for short distance extensions, but the fear of thirty years ago of radio communication replacing the wire operated telephone companies has never materialized and never will. We will always have telephone companies as an essential utility.

I don't think nationalization will come to pass as a Federal government operation if we behave ourselves. The growth and the health of this great industry as it is today springs from independent ownership, a competitive situation—a challenge of the thousands of independent men in the field, one against the other, to do a better job than the other with a high spirit of co-operation one with the other. Therefore, further consolidation of companies with the industry giants with practically single control is as bad for the industry as the dictatorships of the foreign nations are for their nationals.

We need all of our independent manufacturers, with one competing against the other for superiority in development of the equipment. All of this is our American way of life—democratic for the good of all people.

Let my words spring no fear in the minds of any telephone operator that he's in trouble with his present equipment as long as he is producing good service, to which the public is accustomed today. In Turkey I saw a German built carrier system—three channels of which occupied a space nine feet high—many, many years old, still giving good service every day, just as the steam engine still pulls the train, but a Diesel engine is better.

(*Continued on Page* 42)

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Lincoln Telephone and Telegraph Company

Lincoln, Nebraska

MERLE M. HALE, *Vice President*

OBJECTIVES of The Lincoln (Nebraska) Telephone and Telegraph Company continue to point toward improving and extending service, adding to revenues and cutting costs.

By 1964 the company proposes to convert its remaining 19 manual exchanges to dial operation and to establish nationwide direct distance dialing for all of its 126 exchanges. At the present time, 29 exchanges have direct distance dialing to points in southeast Nebraska. On December 4, nationwide direct distance dialing will be established for these exchanges and 15 additional exchanges, including Lincoln.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 STAT. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF Public Utilities Fortnightly published fortnightly at Baltimore, Maryland for October 1, 1960.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher: Public Utilities Reports, Inc., Washington, D. C.

Editor-in-Chief: Ellsworth Nichols, Rochester, N. Y.

Managing Editor: Francis X. Welch, Washington, D. C.

Business Manager: Frederick A. Lavey Washington, D. C.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Public Utilities Reports, Inc., Washington, D. C.; Ernest R. Acker, Poughkeepsie, N. Y.; R. N. Benjamin, New York, N. Y.; Stuart Cooper, Wilmington, Del.; Harland C. Forbes, New York, N. Y.; and George S. Young, New York, N. Y.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 7,217

PUBLIC UTILITIES REPORTS, INC.
Frederick A. Lavey, Business Manager

Sworn to and subscribed before me this 22nd day of September, 1960.

Josephine A. Olker
Notary Public

(My commission expires August 31, 1963)

This four-year program involves construction of nine major buildings and expansion of microwave, distribution, central office and other facilities.

Since 1956 the company has converted 20 exchanges to dial operation and established two new exchanges. Seven major buildings have been constructed, including a nine-story general office and equipment building at Lincoln. Microwave radio relay service has been established for message toll service between 24 exchanges; data processing equipment has been placed in operation to provide mechanized billing and controls for inventories, payroll and labor distribution. Other functions are being added. As noted above, direct distance dialing has been established for 29 exchanges.

Last year the company gained 4,144 stations and daily long distance calls increased from 14,307 to 15,409. It now serves 145,000 telephones (one-fourth of the telephones in Nebraska) and handles over seven million toll messages annually. Reflecting the results of growth, new methods of efficiency and active merchandising, revenues last year increased from $11,950,000 to $13,300,000 and the trend continues into 1960. Investment in telephone plant has doubled in the last eight years and now stands at over $58 million. The gross construction program this year amounts to $6.3 million and next year's program will be comparable.

Continuing emphasis is placed on employee training and education. Training supervisors conduct regular classes in all departments and material is published regularly to keep employees informed concerning the company's program and policies. The management considers such a program to be highly essential in maintaining efficiency and morale and in planning for future supervisory assignments.

The Lorain Telephone Company

Lorain, Ohio

H. E. HAGEMAN, *Chairman of the Board*

WE feel that Independent Telephone Companies have a number of new problems to solve in the next few years.

In our case, we feel that it is still highly essential to furnish good service to our customers. This year our capital expenditures will again increase by approximately $2,000,000 because our territory is still growing in population.

It appears to us that telephone companies are in the position that railroads were in the early 1920's. Governmental agencies were increasing taxes on railroads very sharply during those years. The same thing is happening to our company now. Taxes are taking more than one-third of the dollars we are collecting from our customers. That trend should be stopped.

Nearly every company is also facing competition in the communications field. The compensation we are receiving from Bell Companies for foreign exchange lines, leased lines and teletype lines are not competitive with the revenues we collect from local business establishments. The irony of the situation is that each time we lease such facilities to our outside business establishments, we bring severe competition to a local customer in our area and in some cases the local customer is forced to suspend operations.

Some commercial companies are also putting in microwave circuits between their various offices and then ask for connection to telephone offices at the various terminals in order to reach their people quickly when emergencies occur. Most of those terminal offices of companies using microwave circuits are open only forty hours per week. Those companies in many instances operate twenty-four hours per day. They need connections to the entire telephone system at the terminals.

It seems to me that the proper procedure for all independent companies will be to file their own rates for connections to either microwave circuits, Bell circuits, or circuits to other independent telephone companies for foreign exchange circuits, leased lines and teletype circuits.

The operation of every telephone company is becoming more complex every day because of the many new communication services being offered to our customers. The result is that we will need competent help to render a fine service to our customers. The telephone industry will be furnishing a wonderful opportunity for young people for many years in the future.

North State Telephone Company

High Point, North Carolina

ROBBINS TILDEN, *Vice President and General Manager*

THE North State Telephone Company serves a very prosperous, ...ly industrialized and rapidly ...wing section of North Carolina. ...telephone plant and system has ...e than doubled in size during the ...ten years. During the years 1960 and 1961, still further expansion will be required to meet the ever growing requirements of additional telephone service, both local and toll.

We expect to spend in the neighborhood of $800,000 during the next 18 months to further enlarge our telephone system in High Point, Thomasville, Randleman and the adjacent territory which we serve.

The company presently serves a total of about 36,000 subscribers and enjoys a splendid toll business.

Southeastern Telephone Company

Tallahassee, Florida

E. M. MENENDEZ, *Division Manager*

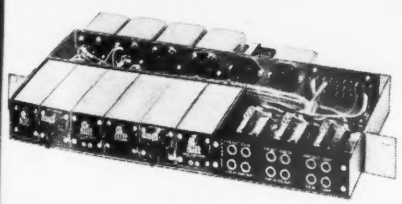
THE telephone industry, in my opinion, is faced today with a ...blem, the solution of which will ...uire the joint effort of the indus... and the co-operation of the regu... ...g agencies.

...n an effort to provide more fa...ies, at a lower cost and thereby ...vide better and faster service, at ...er rates, the telephone industry ... for many years been doing con...al research and as a result has ...eloped new and better methods of ...munication. For example, we ...ted with a circuit consisting of a pair of wires. This developed into a phantom group which provided three circuits with two pairs of wires. Later came the carrier, first in the form of one channel and later as multi-channel, which made it possible to place many circuits on a single pair of wires. Open wire circuits were limited in the number of carrier channels that could be superimposed so the coaxial cable was developed. This permitted hundreds of carrier channels on a single pair of conductors. The ground had hardly settled over the first coaxial cable, however, when microwave came into use which does not even require a metallic path but makes it possible for hundreds of carrier channels to be transmitted through the air from point to point.

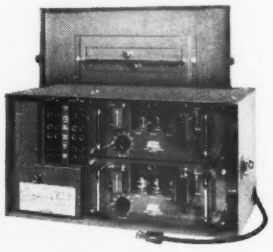
These developments all have benefited the industry and the public. Prior to the advent of the microwave, inter-city communication was pretty much left up to the telephone industry since most of the circuits and channels belonged to them and providing them was a costly matter. With all the advantages of micro-

(*Continued on page* 44)

SEE ALTEC'S LINE of improved telephone equipment

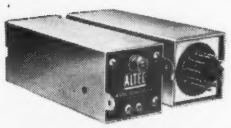


7300 telephone repeater term unit, fully complemented



S-17 Amplifier System

Quick-Fix bay



455A Amplifier

© 1960 Altec Lansing Corporation

AT OUR BOOTH IN CHICAGO, OCTOBER 9-12

- 453A transistor type repeater amplifier for use on 24-26 volts.
- 455A transistor type repeater amplifier for 48-52 volts.
- 529 power supply designed to power 100 transistor type amplifiers from 110 volts AC.
- 533 power supply designed to power 1 transistor type amplifier from 110 AC. Contains bracket for amplifier.
- A series of equalizers for frequency correction for loaded, non-loaded, and open wire circuits.
- 460A transistor type compressor amplifier, interchangeable with 453-455 type.
- A series of brackets and trays to hold amplifiers and power supplies.
- 7300 telephone repeater panel which is equipped with test circuit jacks and accommodates the following plug-in items on standard 19" relay rack—1 rack unit of 1¾" height:

1. Transistor type amplifiers
2. Frequency correction equalizers
3. Hybrid coils
4. Compromise and precision balancing network
5. Relay for loss pad relay switching
6. 4-wire loop back relay for routine testing
7. Repeat coils for simplex or composite signaling

- S-17 Program amplifier, highest quality amplifier for program circuits • A series of microphones, amplifiers and loudspeakers for PA systems • A series of hybrid and repeating coils.

ALTEC LANSING CORPORATION

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A subsidiary of Ling-Temco Electronics, Inc.

wave, it has left open the door for others to compete with the telephone company at a disadvantage to the latter.

The telephone companies are regulated on the basis of their being a monopoly. This being justified and necessary. The regulation, however, exists because of the absence of competition. Now comes unregulated competition which not only competes for the business but in some cases also will attempt to use the facilities of the telephone companies in doing so.

The gate through which most of this is possible is microwave and radio. Inter-city, privately owned and operated microwave systems, and private radio mobile systems are becoming more and more numerous and in most instances, there are justifiable reasons for their existence. When the privately owned systems assume the right to connect their facilities to furnish an over-all communication service to their custom the bounds of fair competition been over-stepped.

Telephone companies should themselves individually and collec ly to guard against this aggres Likewise, the regulatory age should take action, as some alr have, to protect the industry w they regulate against the encro ment of unregulated, unfair co tition.

The Southwestern States Telephone Company

Brownwood, Texas

D. T. STRICKLAND, *Vice President and General Manager*

CONTINUED rapid growth of the Southwest has resulted in unparalleled station development by The Southwestern States Telephone Company.

During 1959, the company had the largest station gain in history with 11,219 stations added to the system. At the end of June, 1960, the company was serving 148,560 stations through 156 exchanges in Texas, Oklahoma, Arkansas, and Louisiana. This represents an increase in stations of 7.7 per cent over the same period a year ago.

Net income available for common stock dividends during the six-month period ended June 30, 1960, amounted to $718,123, equal to 83 cents per average common share, compared to $588,165 or 72 cents per average common share for the same period last year.

As some indication of the growth of the areas served by the company, official census figures show that the company serves the fastest growing cities in both Texas and Arkansas. The company operates the telephone system in Irving, Texas, suburb of Dallas. Official 1960 population of Irving was 45,489, an increase of 1,736 per cent over the 1950 census of 2,621. Service is also provided Jacksonville, Arkansas, a suburb of Little Rock, with a ten-year off census population increase of 482 cent. 1950 Jacksonville popula was 2,474 while the 1960 popula amounted to 14,405.

To adequately serve such growing areas, considerable amou of new money have been require expand and improve telephone se ice. The 1960 construction bud approximates $6,750,000.

In order to attract the necess new money for expansion, the c pany is engaged in a vigorous p gram to reprice its service wh necessary to maintain a favora earnings position. During 1960 alo the company is seeking rate increa amounting to $1,105,000, of wh $690,000 is in Texas.

SERVING 9490 SQUARE MILES
in California and Nevada

This extensive area is served by 29 Central Offices and a Company owned Long Distance network, which includes microwave facilities. Growth in mining, manufacturing, agriculture, recreation facilities and military bases has accounted for more than doubling the size of the company in the past six years.

CALIFORNIA INTERSTATE TELEPHONE COMPANY

Sunland-Tujunga Telephone Company

Sunland, California

ALLAN R. STACEY, *Vice President and Manager*

Management, Too, Needs Training

TELEPHONE Company Management has for years demonstrated concern and interest in certain aspects of employee training. In large companies and in small companies we have made sure that the telephone installer and the switchboard operator received training adequate to guarantee proper performance of their duties. In the largest telephone companies there has likewise been a policy of training management personnel. However, in many, many small operating companies we have been remiss in the area of training *management* personnel.

This was brought home to me in particular when I recently squeezed one week out of a crowded program to attend a Management Development Program sponsored by the California Independent Telephone Association. This program was held at the Management Center on the Ca pus of one of the Universities in t state.

Specifically the Management Pr gram sought to do three things for t person attending:

1. To provide a clear understan ing of the changing nature the function and responsibiliti of modern management. learned that the manager's job changing just as much as a cab splicer's task in learning to wor with plastic cables rather tha the older lead type.)
2. To explore fundamental aspec of the economic, political, an social environment in which eac company must operate. (I ob tained a better understanding the changing times and their ef fect upon my company.)
3. To give a manager direction fo

his continued personal development. (Among other things, I obtained some excellent pointers on how to use and conserve personal time. What manager doesn't need more time today!) day I take this method of passing g to you my realization that we must see to it that our management and supervisory personnel are provided with as much training for management duties as the craft people receive for theirs. This includes even the president of the company, himself.

Many of us in smaller companies have been using horse and buggy management methods to drive 300 horsepower operating machines. It is time we took some driver's lessons which include how to handle the automatic shifting and power steering of today's operating conditions.

United Utilities, Incorporated

Kansas City, Missouri

P. H. HENSON, *Executive Vice President*

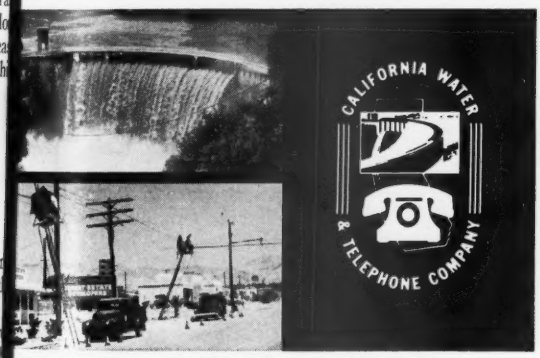
NE of the subject areas in which the editor invited discussion is of telephone planning. Since this ject relates closely to other sug- ed subject areas, we propose to fly discuss the effect of telephone ning on both operations and regu- on.

n the United System, the ultimate ective of all phases of telephone ning is the production of opti- m earnings. Whether the specific a of planning concerns itself with rational procedures, marketing niques, capital expenditures, serv- capabilities, personnel and organi- ional matters, revenue require- nts, or whatever, the end objective he same. The orientation of all planning functions towards this end does not overlook the obvious service objectives and requirements. Quite the contrary. The realization of comprehensive and progressive service objectives is a prerequisite to the attainment of optimum earnings. This objective also squares with regulatory requirements since the most modern and most reasonable telephone service can only be provided if the operating company is "planning for profits." Therefore, both operational and regulatory functions associate directly with telephone planning.

Current and detailed operational decisions are based on the general plans that have been formulated for specific areas. Through the preparation, adoption and utilization of comprehensive operating plans, many day-to-day decisions are made within the framework of the overall plan. So long as the ultimate objective of any given plan is to produce optimum earnings, current operational decisions that are consistent with the plan will tend toward the realization of this objective.

The regulatory function is principally involved in planning through the recognition of the validity of the objectives of planning. Regulatory bodies are not disposed to question the merits of the profit motive even though some elements of modern society seem to be so inclined. In rec-

(*Continued on page* 46)



PROFILE OF A *GROWING* COMPANY

Continuing its dynamic expansion program, California Water & Telephone Company serves 160,000 telephones in diverse areas of Southern California. This forward-looking company provides the most up-to-date telephone service and equipment available to meet the varied demands of its residential, military and business subscribers.

Our water divisions, located in parts of Los Angeles County, portions of San Diego County, and on the Monterey Peninsula, provide water service to an estimated population of 200,000.

Total plant investment now exceeds $100,000,000, an increase of nearly 100 per cent during the past five years.

California *Water & Telephone Company*

300 MONTGOMERY STREET · SAN FRANCISCO 4, CALIFORNIA

GROWING
WITH THE
PACIFIC
NORTHWEST

West Coast Telephone

West Coast Telephone Company's growth has closely paralleled the industrial, commercial and residential expansion of the Pacific Northwest. The Company now serves more than 180,000 telephone subscribers throughout this area. Our high standards of service and utilization of modern equipment are important factors contributing to the Company's position as 10th largest of the 3,500 Independent Telephone Companies in the nation.

WEST COAST TELEPHONE COMPANY

300 MONTGOMERY STREET · SAN FRANCISCO 4, CALIFORNIA

ognizing that the telephone industry must realize earnings that compare reasonably with other progressive companies under competition, regulatory bodies thereby recognize the objectives of planning. If, indeed, regulatory bodies are seeking to protect the best interests of both the subscriber and the regulated utility, the objectives of planning must be recognized.

Telephone planning with the objective of realizing optimum earn has had and will continue to ha significant impact on the United tem. We recommend it without qu fication to others in the industry.

West Coast Telephone Company

Everett, Washington

L. Gray Beck, *Vice President and General Manager*

Management Training

The West Coast Telephone Company has long realized that its future success and prosperity will be largely determined by the competence of its management employees. An effective training program designed to enhance management and supervisory skills has been given top priority in our planning as we prepare for our anticipated future growth.

The emphasis in our management training program is placed on developing the leadership qualities of our management group. Admittedly, leadership is an intangible and difficult to define. Our approach to the problem is to assist our management in better understanding the role of the supervisor and to provide basic training in leadership skills. If a supervisor fully understands his job and is willing to apply valid leadership techniques, he will in most cases be successful.

We do not believe, of course, that a man or woman who can efficiently handle an employee grievance or effectively counsel an employee on a job problem automatically becomes a leader. We do believe that our management employees have basic leadership qualities or they would not have achieved their present positions. The full potential of their leadership abilities, however, can be realized only by a systematic exposure to a well-developed, well-executed training program.

Our training program of necessity is tied to our policy of careful selection of management employees through the use of psychological and aptitude testing, skilled interviewing, performance review, counseling and incentive promotions when the individual has proven himself. The basic ability of our management group is known to us—training permits them to supplement and refine these inherent abilities.

The content of our management program was developed after a careful review of our training needs. This resulted in the establishment of two basic tenets: First, any training program should contain information that is both desired by and useful to the participants. This is a prerequi since not only are the particip often the best judges of the trai which is needed, but also the f evaluation of the program will how well the material is transl into actual job effectiveness. Sec the program should have a net w to the company. The tangible fects of training should reflect actual cost savings by increasing p ductivity and efficiency of operat Only by reducing present cost fac and/or increasing revenue can expense of the program be justi

Through a series of meetings, management employees were g the opportunity to express their n in a training program. This in mation was combined with recommendations of professio training consultants into a deta three-year program.

By discussing the area of lead ship in detail and by developing creased confidence in employees' a ity to perform more effectively the job, we will be able to up-gr management performance and id tify and prepare a trained pool management employees for fut promotion.

The Winter Park Telephone Company

Winter Park, Florida

J. K. Galloway, *President*

Management

The greatest area of weakness in the independent telephone industry is management. Management is the efficient use of personnel and facilities to produce an adequate service for the public. Such contemplates the careful selection of people to insure that the individual selected has an aptitude for the job to which he is assigned. Good management requires training for all employees to insure greater proficiency in the job assigned. In addition, those employees with the aptitudes required for managers must be given an opportunity to acquire the knowledge and information which will ma them efficient managers.

Managers must take greater a vantage of the available facilities train people. The USITA Manag ment Development Course at the U versity of Kansas is excellent, a each year is being improved. Eve company in the independent indust should be represented at this ma agement course.

The USITA sponsored engine ing course at the University of Mic igan is excellent for engineering ma agement people. The USITA semin to be held next year on Marketing

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CAPITAL CITY Telephone COMPANY
JEFFERSON CITY, MISSOURI

University of Michigan will also excellent, and those attending will eive valuable information on how improve the sales techniques used their company. The REA Rural Development conferes held in various districts on nt, Traffic, Engineering, Commerl and Accounting are excellent, f each of our REA borrowers uld be represented at these conences when they are scheduled in region.

There are extensive courses avail- e in connection with supervisor ining, such as Fundamentals of pervision, Human Relations, Job thods and Job Instruction Train- . It is noteworthy to observe that time has passed when we can e a good installer and make him stallation Supervisor without in- uctions other than, "Jim, you are w Supervisor of Installation, put ur hat on the other side of your d and act like one." We must ch our people how to handle the ple that work for them.

Training films are an excellent rce of training material. Such ns are available from the Bell Company, General Telephone and other large businesses, usually at no cost. People learn more easily through the use of visual aids.

Good managers insure that their people receive wages comparable with those paid for similar skills in their area; provide for their people to retire with income supplementing Social Security benefits; and furnish hospitalization benefits in addition to Workmen's Compensation. Good management requires an employee evaluation program—a plan for each individual in the company to be apprised of his weak points and his strong points, making it possible for him to improve in the areas that will benefit him and the company.

Good management requires the company to have a written set of policies which set forth the objectives of the company. Such policies should be promulgated and explained to all members of the management team and all employees in the company. Each individual should then extend himself to insure that these policies are followed.

An essential tool of management is communications. Managers must keep their people informed of what is going on. They should know company policy; they should know generally the company position; they should know from week to week changes in company plans as such plans are developed. There should be staff conferences on a weekly basis for fast growing companies, and perhaps less often for companies that are not growing fast, where company policies are discussed, company plans are made, supervisors given the chances to discuss their problems and inquire as to how such can be solved. Remember, the more people in your company that have a hand in determining the company course of action, the greater the support will be in implementing the executive action required to see that company policy is followed.

As managers, it is our responsibility to make available to our people the facilities for them to learn more, so that they can act with more authority, accept more responsibility, so that we can pay them more.

(*Continued on page* 48)

WESTERN CAROLINA TELEPHONE COMPANY is one of the larger regional operating telephone companies in North Carolina, operating 19 exchanges with approximately 17,000 stations. The company serves all or a portion of 11 counties in western and southwestern North Carolina which are: McDowell, Yancy, Mitchell, Madison, Buncombe, Jackson, Swain, Graham, Cherokee, Clay and Macon North Carolina and Rabun County, Georgia.

NORTH CAROLINA TELEPHONE COMPANY operates 11 exchanges in the south central portion of North Carolina, having in service approximately 8,000 stations, and serves all or a portion of Eastern Mecklenburg County, Union County, Anson County, and Stanly County.

The territories of both companies are in a growth period due to the diversified type of industry and agriculture in their respective areas. Inquiries are invited from institutions and industries interested in plant sites in this section of the South, as well as individuals interested in relocating on account of retirement.

WESTERN CAROLINA TELEPHONE COMPANY
NORTH CAROLINA TELEPHONE COMPANY

Inquiries should be addressed to the President's Office, Box 38, Matthews, North Carolina.

Voice For The Voiceless

A NEW voice for the voiceless has been introduced by the Bell Telephone System.

Some 20,000 persons in the United States are without the power of speech as a result of paralysis or surgical removal of the larynx and must depend either on esophageal speech or an artificial larynx in order to talk.

The new device, an electronic larynx, will be made available on a non-profit basis by the Bell Telephone Companies. It resembles a streamlined electric shaver, contoured to fit the hand and designed to be held against the outside of the throat while being operated. It transmits sound waves into the throat cavity replacing those normally produced by air passing over the vocal cords. Speech is produced by forming words with the lips and tongue just as in normal conversation. Persons with speech handicaps have learned to use the instrument with a minimum of training and difficulty.

The electronic larynx is produced in two models, one high-pitched to simulate the female voice and the other with a lower pitch for men. Both are provided with a finger control which enables the user to vary the pitch of his voice over a half-octave range in order to produce more natural inflections of speech and emphasis on words or phrases. After practice, this control can be operated with considerable speed, enabling the user to produce speech of considerable intelligibility and naturalness. Speech volume is equivalent to a normal talker speaking at a conversational level.

The device employs Bell transist and is powered by self-contained m cury batteries of a type obtainabl any radio store. Battery life range to several months depending on amount of use.

The instrument was developed Bell Telephone Laboratories. Sugg tions were contributed by medical thorities, particularly the Natio Hospital for Speech Disorders, by artificial larynx users themsel It is made by Western Electric C pany, manufacturing and supply u of the Bell System. Manufactur cost is $45 which also is the cost to customer.

Information regarding the l larynx may be obtained at any Telephone business office. It will made available to the public on a fi come, first served basis.

This announcement is not an offer to sell or a solicitation of an offer to buy these securities. The offering is made only by the Prospectus.

$60,000,000

New York Telephone Company

Refunding Mortgage 4⅝% Bonds, Series L

Dated October 1, 1960 Due October 1, 1997

Price 101.50% and accrued interest

The Prospectus may be obtained in any State in which this announcement is circulated from only such of the undersigned and other dealers as may lawfully offer these securities in such State.

HALSEY, STUART & CO. INC.

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BURNS BROS. & DENTON, INC. COURTS & CO. HIRSCH & CO.

E. F. HUTTON & COMPANY NEW YORK HANSEATIC CORPORATION

SWISS AMERICAN CORPORATION

September 29, 1960.

THE POWER TO GROW

GROWING PAINS CAN BE PLEASANT

System growth is a healthy sign of area prosperity with a bright promise of more come. But this growth often is accompanied by difficult problems for management. Because rates are ted, utility management has no reserve with which to finance expansion and therefore must issue securities.

The utility's past performance, as recorded in its earnings statement, is the basis pon which these securities are underwritten. Because an investor analyzes a utility's efficiency and future om its own reports, management must try to consider and control everything that affects profits.

One important area in which the utility can secure greater control over costs is perational dependability. Greater dependability not only means revenue from existing customers, it attracts ew industry.

For over sixty-four years, Moloney's record of performance has enabled many mpanies to report good records of earnings and to obtain financing at very favorable rates. Take the in our of growth for your system . . . Moloney understands utility problems . . . Moloney Transformers elp to solve them.

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MANUFACTURERS OF TRANSFORMERS FOR UTILITIES, INDUSTRY AND ELECTRONIC APPLICATIONS

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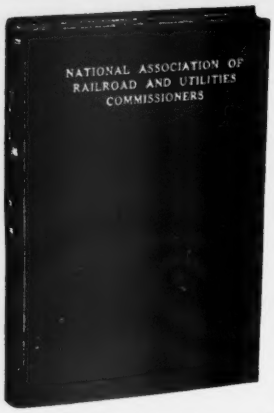

PROCEEDINGS
1959 CONVENTION
AT PHILADELPHIA, PENNSYLVANIA
NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS

THIS edition contains valuable material on the subject of regulation of rates and services of public utilities and transportation companies including the following:

Rates of Public Utilities and Transportation Agencies, Valuation, Railroad Problems, and Regulation of Public Utilities, Panel Discussion on the subject of "Inflation and Its Effect on Utility Regulation of Rates and Utility Financing," Addresses on "Legislation Affecting the Federal Regulatory Process" and "The Impact of the Supreme Court Decision in the Service Storage and Transfer Case." This volume contains a complete transcript of the addresses and committee reports of the 1959 Philadelphia meeting. The book is printed and bound in regular book cover.

Price $10.00—Approximately 500 Pages

OTHER PUBLICATIONS OF THE ASSOCIATION

1957—Uniform System of Accounts for Water Utilities
Class A & B—128 pages
Accounts for utilities having annual water operating revenues of $250,000 or more .. $4.50
Class C—100 pages
Accounts for utilities having annual water operating revenues of $50,000 or more but less than $250,000 ..... 3.50
Class D—64 pages
Accounts for utilities having annual water operating revenues of less than $50,000 .... 2.00

1958—Uniform System of Accounts for Electric Utilities
Class A & B—169 pages
Accounts for utilities having annual electric operating revenues of $1,000,000 or more 4.50
Class C—125 pages
Accounts for utilities having annual electric operating revenues of $150,000 or more but less than $1,000,000 ..... 3.50
Class D—59 pages
Accounts for utilities having annual electric operating revenues of less than $150,000 .. 2.00

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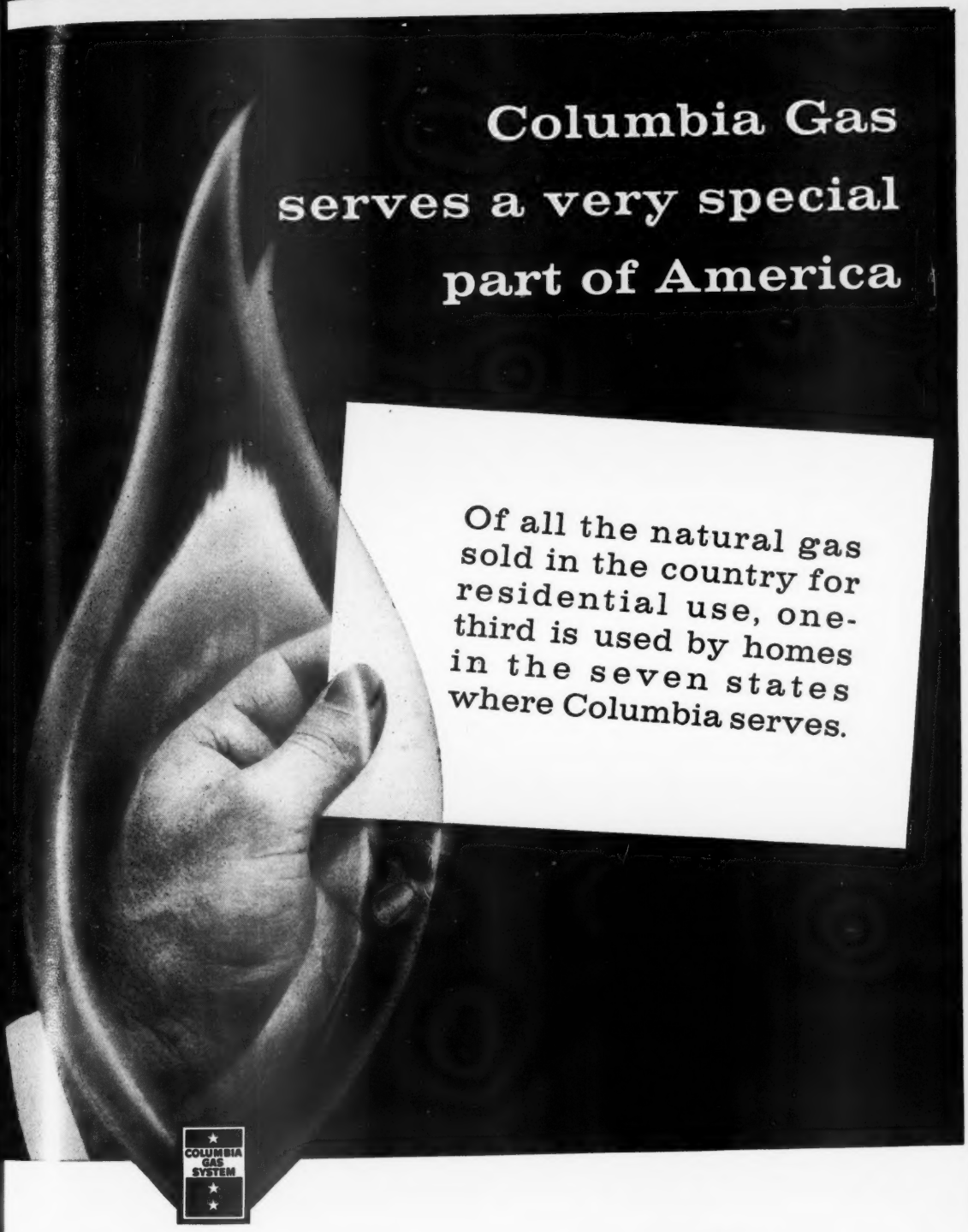
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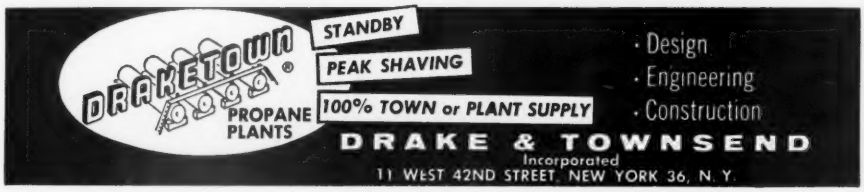

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*Allied Chemical Corporation-Plastics & Coal Chemicals Division
*Allis-Chalmers Manufacturing Company
American Appraisal Company, The 52
*American Motors Corp.
Analysts Journal, The 40
Altec Lansing Corporation 43

B

Babcock & Wilcox Company, The 16-17
Black & Veatch, Consulting Engineers 52
*Blyth & Company, Inc.
Boni, Watkins, Jason & Co., Inc. 52
Burns & McDonnell, Engineers 57
Burns and Roe, Inc. 52
*Burroughs Corporation

C

California Interstate Telephone Company 44
California Water & Telephone Company 45
Capital City Telephone Company 46
Carolina Telephone and Telegraph Company 31
Carter, Earl L., Consulting Engineer 57
Central Telephone Company and Affiliates 19
*Coleman Company, Inc., The
Columbia Gas System, Inc., The 51
Combustion Engineering, Inc. 14-15
Commonwealth Associates, Inc. 29, 52
Commonwealth Services, Inc. 29, 52
Consolidated Gas and Service Company 57

D

Dames & Moore 53
Day & Zimmermann, Inc., Engineers 53
Dialaphone 13
Dodge Division of Chrysler Corp. 9
Drake & Townsend, Inc. 53

E

*Eastman Dillon, Union Securities & Company
*Ebasco Services Incorporated
Electro-Motive Division, General Motors 20-21
Empire Gas Engineering Company 53
Empire Steel & Wire Corporation 46

F

Fitchburg Engineering Corporation 37
*First Boston Corporation, The
Florida Telephone Corporation 29
Ford, Bacon & Davis, Inc., Engineers 53
Foster Associates, Inc. 53
Francisco & Jacobus, Engineer & Architect 54

G

Gannett Fleming Corddry and Carpenter, Inc. 57
*General Electric Company
General Machine Products Company, Inc. 38
General Telephone & Electronics Corporation Inside Back Cover
Gibbs & Hill, Inc., Consulting Engineers 54
Gilbert Associates, Inc., Engineers 54
Gilman, W. C., & Company, Engineers 54
*Glore, Forgan & Company
G & W Electric Specialty Company 23

H

Halsey, Stuart & Company, Inc. 48
*Harriman, Ripley & Company
Harza Engineering Company 54
Hirsch, Gustav, Organization, Inc. 33
*Hi-Voltage Equipment Company
Hoosier Engineering Company 54
Hughey & Phillips, Inc. 39

I

International Business Machines Corp. 5
International Paper Company, Wood Preserving Division 28
Internuclear Company 57
Irving Trust Company 4

J

Jackson & Moreland, Inc., Engineers 57
Jensen, Bowen & Farrell, Engineers 54

K

Kellogg, M. W., Company, The 55
Kidder, Peabody & Company Outside Back Cover
*Kuhn Loeb & Company
Kuljian Corporation, The 55

L

*Langley, W. C., & Co.
Lee Telephone Company 37
Leffler, William S., Engineers Associated 55
*Lehman Brothers
*Line Material Industries
Lincoln Telephone and Telegraph Company, The 11
*Loeb (Carl M.) Rhoades & Co.
Lougee, N. A. & Company 55
Lutz & May Company, Consulting Engineers 57

M

*Main, Chas. T., Inc., Engineers
*McCulloch Corporation
*Merrill Lynch, Pierce, Fenner & Smith, Inc.
Miner & Miner, Consulting Engineers 57
Moloney Electric Company 49
*Morgan Stanley & Company

N

National Association of Railroad & Utilities Commissioners 50
National City Management Company 55
North Carolina Telephone Company 47
North State Telephone Company 39

O

Osmose Wood Preserving Company of America, Inc. 35

P

Pioneer Service & Engineering Company 24, 55
Pittsburgh Testing Laboratory 57
*Plastic and Coal Chem. Allied Chemical Corp.
*Pole Sprayers, Inc.

R

Ransom, R. A., Company, Inc. 56
Recording & Statistical Corporation 30
Remington Rand Div. of Sperry Rand Co. 18

S

Sanderson & Porter, Engineers 56
Sargent & Lundy Engineers 56
Schulman, A. S., Electric Co., Engineers 57
*Smith Barney & Company
Southwestern States Telephone Company, The 29
Standard Research Consultants, Inc. 56
Stone and Webster Engineering Corporation 56
*Studebaker-Packard Corporation
Sverdrup & Parcel, Engineers Consultants 57

T

Telkor, Inc. 35
*Texoma Enterprises, Inc.
Thornhill Publishing Company 36
Telephone Electronics Installation Corporation 32
Tele-Wire Supply Company, Inc. 33

U

United Utilities, Inc. 7
United States Independent Telephone Association Inside Front Cover

V

Vermeer Manufacturing Co. 34

W

West Coast Telephone Company 45
Western Carolina Telephone Company 47
*Westinghouse Electric Corporation
*White, Weld & Co.
Whitman, Requardt and Associates 56
Williams, A. W., Inspection Co., Inc. 57

Professional Directory 52-57

*Fortnightly advertisers not in this issue.

57
54
55
Back Cover
55
37
55
11
55
57
57
49
50
55
47
39
Inc. 35
24, 55
57
56
30
18
56
56
57
29
56
56
57
35
36
32
33
7
Int Cover
34
45
47
56
57
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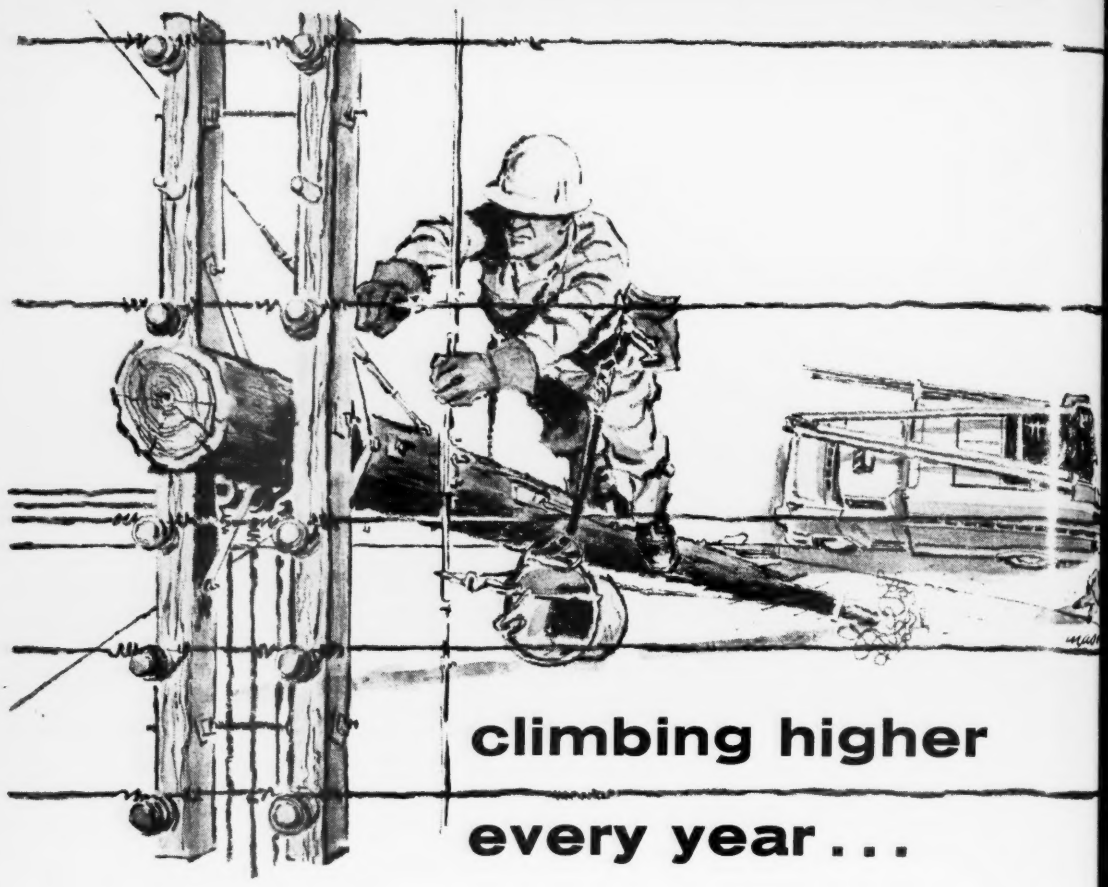

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